

Peoples Gas
Rogers Park
H-4

URS

REVISED FOCUSED SITE
INVESTIGATION/
REMEDIAL ACTION PLAN/
REMEDIAL ACTION COMPLETION
REPORT

THE PEOPLES GAS LIGHT AND
COKE COMPANY
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FOR CLARE CORPORATION AND
GENERAL SEMICONDUCTOR, INC.

314349

URS Job No. 30413-008-007
February 22, 2002



Illinois Environmental Protection Agency
Bureau of Land
Remedial Project Management Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

FOR ILLINOIS EPA USE:
LOG No. _____

Site Remediation Program Form (DRM-2)
(To Be Submitted with all Plans and Reports)

I Site Identification:

Site Name: Peoples Gas - Rogers Park Substation
Street Address: 6659 North Kedzie Avenue
City: Chicago Illinois Inventory I. D. Number: _____
IEMA Incident Number: _____

II. Remediation Applicant:

Applicant's Name: Harry Andersen Company: Clare Corporation
Street Address: 78 Cherry Hill Drive
City: Beverly State: MA ZIP Code: 01915 Phone: 978-524-6722

I hereby request that the Illinois EPA review and evaluate the attached project documents in accordance with the terms and conditions of the Environmental Protection Act (415 ILCS 5), implementing regulations, and the review and evaluation services agreement.

Remediation Applicant's Signature: Harry Andersen Date: 2/20/02

III. Contact Person:

Contact's Name: Allison Miller Company: Peoples Gas
Street Address: 130 E. Randolph Dr.
City: Chicago State: IL ZIP Code: 60601 Phone: 312-240-4832

IV. Review & Evaluation Licensed Professional Engineer ("RELPE"), if applicable:

RELPE's Name: N/A Company: _____
Street Address: _____
City: _____ State: _____ ZIP Code: _____ Phone: _____
Registration Number: _____ License Expiration Date: _____

All information submitted is available to the public except when specifically designated by the Remediation Applicant to be treated confidentially as a trade secret or secret process in accordance with the Illinois Compiled Statutes, Section 7(a) of the Environmental Protection Act, applicable Rules and Regulations of the Illinois Pollution Control Board and applicable Illinois EPA rules and guidelines. The Illinois EPA is authorized to require this information under Sections 415 ILCS 5/58-58.12 of the Environmental Protection Act and regulations promulgated thereunder. Disclosure of this information is required as a condition of participation in the Site Remediation Program. Failure to do so may prevent this form from being processed and could result in your plan(s) or report(s) being rejected. This form has been approved by the Forms Management Center.

**Remedial Action Completion Report, The Peoples Gas Light and Coke Company,
Rogers Park Substation, Chicago, Illinois**

V. Project Documents Being Submitted:

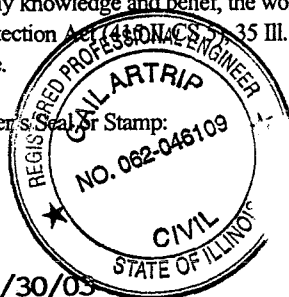
Document Title: <u>see above **</u>	Date of Preparation of Plan or Report: <u>Feb. 22, 2002</u>
Prepared by: <u>URS Corporation</u>	Prepared for: <u>CP Clare Corporation and General Semiconductor, Inc.</u>
Type of Document Submitted:	
<input type="checkbox"/> Site Investigation Report - Comprehensive	<input type="checkbox"/> Sampling Plan
<input checked="" type="checkbox"/> Site Investigation Report - Focused	<input type="checkbox"/> Health and Safety Plan
<input checked="" type="checkbox"/> Remediation Objectives Report-Tier 1 or 2	<input type="checkbox"/> Community Relations Plan
<input type="checkbox"/> Remediation Objectives Report-Tier 3	<input type="checkbox"/> Risk Assessment
<input checked="" type="checkbox"/> Remedial Action Plan	<input type="checkbox"/> Contaminant Fate & Transport Modeling
<input checked="" type="checkbox"/> Remedial Action Completion Report	<input type="checkbox"/> Environmental Remediation Tax Credit - Budget Plan Review
Other: _____	

Document Title: _____	Date of Preparation of Plan or Report: _____
Prepared by: _____	Prepared for: _____
Type of Document Submitted:	
<input type="checkbox"/> Site Investigation Report - Comprehensive	<input type="checkbox"/> Sampling Plan
<input type="checkbox"/> Site Investigation Report - Focused	<input type="checkbox"/> Health and Safety Plan
<input type="checkbox"/> Remediation Objectives Report-Tier 1 or 2	<input type="checkbox"/> Community Relations Plan
<input type="checkbox"/> Remediation Objectives Report-Tier 3	<input type="checkbox"/> Risk Assessment
<input type="checkbox"/> Remedial Action Plan	<input type="checkbox"/> Contaminant Fate & Transport Modeling
<input type="checkbox"/> Remedial Action Completion Report	<input type="checkbox"/> Environmental Remediation Tax Credit - Budget Plan Review
Other: _____	

Document Title: _____	Date of Preparation of Plan or Report: _____
Prepared by: _____	Prepared for: _____
Type of Document Submitted:	
<input type="checkbox"/> Site Investigation Report - Comprehensive	<input type="checkbox"/> Sampling Plan
<input type="checkbox"/> Site Investigation Report - Focused	<input type="checkbox"/> Health and Safety Plan
<input type="checkbox"/> Remediation Objectives Report-Tier 1 or 2	<input type="checkbox"/> Community Relations Plan
<input type="checkbox"/> Remediation Objectives Report-Tier 3	<input type="checkbox"/> Risk Assessment
<input type="checkbox"/> Remedial Action Plan	<input type="checkbox"/> Contaminant Fate & Transport Modeling
<input type="checkbox"/> Remedial Action Completion Report	<input type="checkbox"/> Environmental Remediation Tax Credit - Budget Plan Review
Other: _____	

VI. Professional Engineer's Seal or Stamp:

I attest that all site investigations or remedial activities that are the subject of this plan(s) or report(s) were performed under my direction, and this document and all attachments were prepared under my direction or reviewed by me, and to the best of my knowledge and belief, the work described in the plan and report has been designed or completed in accordance with the Illinois Environmental Protection Act (410 ILCS 205/1-35 Ill. Adm. Code 740, and generally accepted engineering practices, and the information presented is accurate and complete.

Engineer Name: Gail Artrip, Professional Engineer's Seal or Stamp: 

Company: URS Corporation Phone: 847-228-0707

Registration Number: 062-046109


Signature:  License Expiration Date: 11/30/05

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	v
1.0 INTRODUCTION	1
2.0 FACILITY BACKGROUND AND USE	1
3.0 BASIS OF INVESTIGATION	3
4.0 PEOPLES GAS SITE INVESTIGATION	4
5.0 GEOLOGY/HYDROGEOLOGY	5
6.0 APPLICABLE REMEDIATION OBJECTIVES	7
6.1 SOIL REMEDIATION OBJECTIVES	7
6.2 GROUNDWATER REMEDIATION OBJECTIVES	9
7.0 ANALYTICAL RESULTS	9
8.0 REMEDIAL STRATEGY/REMEDIAL ACTION	10
9.0 SPECIAL CONDITIONS	12
10.0 RESULTS/ENDANGERMENT ASSESSMENT	14
11.0 CONCLUSIONS	14

TABLES

TABLE 1	SUMMARY OF GEOTECHNICAL RESULTS
TABLE 2	SUMMARY OF TACO INPUT PARAMETERS
TABLE 3	SUMMARY OF POTENTIALLY APPLICABLE SOIL REMEDIATION OBJECTIVES
TABLE 4	PHASE II SITE INVESTIGATION - SOIL ANALYTICAL DATA
TABLE 5	CONFIRMATORY SOIL SAMPLING ANALYTICAL DATA
TABLE 6	CONSTRUCTION WORKER SOIL REMEDIATION OBJECTIVES

FIGURES

FIGURE 1	SITE LOCATION MAP
FIGURE 2	SITE MAP
FIGURE 3	SOIL BORING LOCATION MAP
FIGURE 4	GEOLOGIC CROSS-SECTION
FIGURE 5	CONFIRMATORY SOIL SAMPLING MAP
FIGURE 6	FOCUSED AREA OF INVESTIGATION INCLUDING AREAS WITH NO FUTURE LAND USE RESTRICTIONS/SITE BASE MAP
FIGURE 7	FOCUSED AREA OF INVESTIGATION INCLUDING AREAS WITH INDUSTRIAL/COMMERCIAL FUTURE LAND USE RESTRICTIONS/SITE BASE MAP

APPENDICES

APPENDIX A	SOIL BORING LOGS
APPENDIX B	OFF-SITE BORING LOGS/LOCATION MAPS
APPENDIX C	GEOTECHNICAL DATA

APPENDIX D	TIER 2 SOIL REMEDIATION OBJECTIVES SPREADSHEETS
APPENDIX E	PHASE II INVESTIGATION LAB ANALYTICAL REPORTS
APPENDIX F	EXCAVATION CONFIRMATORY LAB ANALYTICAL REPORTS
APPENDIX G	GROUNDWATER MODELLING RESULTS
APPENDIX H	PROFESSIONAL ENGINEER CERTIFICATION

**REVISED FOCUSED SITE INVESTIGATION REPORT/
REMEDATION OBJECTIVES REPORT/
REMEDIAL ACTION PLAN/
REMEDIAL ACTION COMPLETION REPORT
THE PEOPLES GAS LIGHT AND COKE COMPANY
ROGERS PARK SUBSTATION
CHICAGO, ILLINOIS**

EXECUTIVE SUMMARY

A focused Phase II environmental site investigation was undertaken at the Peoples Gas Light and Coke Company - Rogers Park Substation facility located at 6659 North Kedzie Avenue (Cook County) in Chicago, Illinois (Peoples Gas or the Subject Site). The investigation was prompted as a result of the detection of subsurface soil contamination at the neighboring property located at 3101 West Pratt Avenue (3101 Site), at an area adjacent to the northern property boundary of the Subject Site. No groundwater contamination was found on the 3101 Site, and the Illinois Environmental Protection Agency (Illinois EPA) concurred with the finding that the soil component of the groundwater ingestion exposure pathway should be eliminated from consideration. Both of the groundwater ingestion exposure pathways are eliminated from consideration at the Peoples Gas site on the basis of reliance on the Chicago groundwater ordinance.

The 3101 Site was entered voluntarily into the Illinois EPA's Site Remediation Program. Illinois EPA assigned a site number of 0316020001 (Cook County) for the 3101 Site. An extensive investigation of the 3101 Site was conducted to determine the presence and extent of contamination. Soils contaminated with various chlorinated solvents and heavy metals (specifically mercury, chromium, and lead) were found to exist from the near surface to depths of approximately 17 feet along the western half of the south property line area on the 3101 Site. This information was provided to the Illinois EPA. In response, the Illinois EPA requested that CP Clare Corporation and General Semiconductor, Inc. (fka General Instrument Corporation), collectively the parties undertaking remediation of the 3101 Site (the Remediating Parties), contact appropriate representatives of Peoples Gas, provide pertinent analytical findings, and request permission to conduct a limited (i.e., focused) soil investigation on the Peoples Gas property in proximity to the common property line.

Multiple phases of focused soil investigation were carried out at the Peoples Gas property (January 1996; August 1996; and December 1997) for the purpose of delineating the lateral and vertical extent

of soil contamination. Two sets of proposed soil remediation objectives were developed as the basis against which to compare the resulting analytical data. The first set assumed a residential future use of the Peoples Gas property; the second set assumed a commercial/industrial future use of the Peoples Gas property. Based on the results of the investigations, soils were found to exceed one or both sets of proposed soil remediation objectives at certain locations on the Peoples Gas property for various chlorinated solvents. No mercury, chromium or lead contamination above residential or industrial/commercial soil remediation objectives was detected on the Peoples Gas property. The potential presence of contaminants, other than volatile organic compounds, mercury, lead, and chromium, was not evaluated since other contaminants were not found to be of concern on the adjacent 3101 Site which formed the basis of the investigation.

Representatives of Peoples Gas and the Remediating Parties agreed upon a remedial strategy for addressing the soil contamination on the Peoples Gas property which consisted of excavation followed by low temperature thermal desorption. Remedial activities on the Peoples Gas Site were scheduled to occur concurrent with remedial activities on the 3101 Site due to the interrelated nature of planned activities, including excavation and treatment of soils from both sites along the common property line and nearby sewer work on the 3101 Site. The affected area of the Peoples Gas property is in close proximity to large diameter subsurface natural gas transmission mains and appurtenant equipment. As such, careful coordination and execution of the work was imperative in order to protect the infrastructure. Because of the depth to which soil contamination was found to exist on the Peoples Gas property, installation of steel sheet piling was required to prevent undermining of the transmission mains. Approximately 275 lineal feet of cantilevered steel sheeting was installed to a depth of 40 feet below ground surface. The sheeting will remain in place.

Following installation of the sheet piling, excavation of impacted soils commenced. An estimated 2,340 cubic yards of soils were excavated from the Peoples Gas Site, stockpiled within the 3101 Site building (a RCRA containment building), characterized for its chemical content, and, where indicated, treated on the 3101 Site via low temperature thermal desorption in accordance with Dames & Moore's December 13, 1995 *Design Report*. Confirmatory excavation floor and wall samples were also collected in accordance with the approved *Design Report*. Stockpiled soils that were found not to exceed Illinois EPA-approved residential soil remediation objectives, as well as soils thermally treated to meet residential soil remediation objectives, were returned to the open excavations on the Peoples Gas property in accordance with the terms established by representatives of Peoples Gas and the Remediating Parties, and consistent with the prescribed soil management methods outlined in the approved *Design Report*.

Low temperature thermal desorption treatment activities at the 3101 Site voluntarily ceased on October 2, 1996 as a result of concerns expressed by the public and governmental authorities. At that time, approximately 92% (2,340 of 2,530 cubic yards) of the impacted soils on the Peoples Gas property had already been remediated via excavation. A portion of the excavated soils had already been thermally treated and returned to the Peoples Gas open excavations. The remaining excavated soils, which had been staged in the building at the 3101 site awaiting thermal treatment, were instead transported off site for incineration between December 1996 and February 1997. No additional impacted soils were excavated from the Peoples Gas Site following the October 2, 1996 shutdown. Following discussions between representatives of Peoples Gas and the Remediating Parties, it was agreed that no additional soils would be excavated and that soils to be used for backfilling would be imported to the Peoples Gas Site from a quarry. Crushed aggregate meeting the Illinois Department of Transportation materials specifications for CA-6 or CA-7, commonly used in road construction as asphalt subbase, was brought to the Peoples Gas Site for use as backfill. This work was completed in October through December 1997. Site regrading, regravelling, fence restoration and other related tasks were also completed at that time.

At the close of remedial activities and site restoration, certain areas within the focused area of investigation on the Peoples Gas Site remain underlain by soils with contamination above residential but below commercial/industrial soil remediation objectives. Other portions of the focused area of investigation meet applicable soil remediation criteria. As such, a deed restriction will be applied to portions of the focused area of investigation to ensure a future commercial/industrial land use. The total area of the focused site investigation occupies approximately 6,339 square feet or 0.15 acres. The two areas within the focused investigation area where an industrial/commercial deed restriction will be imposed measure 349 square feet and 483 square feet for a total of 832 square feet or 0.02 acres. Scaled drawings and legal descriptions for each of these areas are provided in this report. In addition, the drawings and legal descriptions delineate the aerial extent of the investigations carried out on the Peoples Gas property to which this report is limited. Two focused No Further Remediation letters are requested for the area investigated: one conditioned upon implementation of the future commercial/industrial land use for the two areas where contamination will remain, and one without future land use restrictions.

**REVISED FOCUSED SITE INVESTIGATION REPORT/
REMEDATION OBJECTIVES REPORT/
REMEDIAL ACTION PLAN/
REMEDIAL ACTION COMPLETION REPORT
THE PEOPLES GAS LIGHT AND COKE COMPANY
ROGERS PARK SUBSTATION
CHICAGO, ILLINOIS**

1.0 INTRODUCTION

A focused Phase II environmental site investigation was undertaken at the Peoples Gas Light and Coke Company - Rogers Park Substation facility located at 6659 North Kedzie Avenue (Cook County) in Chicago, Illinois (Peoples Gas or the Subject Site). Refer to Figure 1 for the location of the Subject Site. The investigation was prompted as a result of the detection of subsurface soil contamination at the neighboring property located at 3101 West Pratt Avenue (3101 Site), at an area adjacent to the northern property boundary of the Subject Site in proximity to the common property line. The work reported herein was conducted in accordance with the Illinois Environmental Protection Agency's (Illinois EPA's) Site Remediation Program regulations contained in Title 35 Illinois Administrative Code (35 IAC) Part 740 and with the Tiered Approach to Corrective Action Objectives (TACO) regulations contained in 35 IAC Part 742. Two focused No Further Remediation (NFR) letters are sought for a 0.15-acre strip (i.e., the focused site investigation area) along the northern boundary of the Subject Site; one based on an unrestricted future land use for portions of the study area and one based on an industrial/commercial future land use deed restriction for the balance of the study area. This report makes reference to work performed by Dames & Moore and URS Corporation. Dames & Moore is a wholly owned subsidiary of URS Corporation.

2.0 FACILITY BACKGROUND AND USE

The Peoples Gas - Rogers Park Substation occupies 16.15 acres. Most of the Peoples Gas property is occupied by grassy areas, particularly along the southern and eastern portions of the property. The Peoples Gas Site is surrounded by chain link fencing and may only be accessed through a 24-hour guarded entrance. Refer to Figure 2 for a layout of the Site. The 0.15-acre focused site investigation area is also shown on this figure.

According to Peoples Gas representatives, the facility was constructed in 1926 by Peoples Gas as a gas storage facility. The Subject Site housed a 15 million cubic foot waterless (tar-seal) gas holder

as well as an exhaust house (now the Sub Shop Building), a compressor room (now the Boiler House, Store Room, and Computer Building), and several other smaller structures. The property was expanded to Albion Avenue on the south with an additional land purchase of 6.2 acres in 1956. Gas storage at the site ceased in 1969 with the gas holder being dismantled at about that time.

The Peoples Gas Site is currently in use as a natural gas transmission station. According to Peoples Gas representatives, no change from the current land use is planned, particularly in proximity to the study area.

The Subject Site is currently used as a Sub Shop for the North District, and until recently, as a gate station. The Sub Shop building serves as a reporting location for Distribution Department and Service Department crews. Transportation Department personnel service company vehicles in the garage building. Until a few months ago, the fenced substation area (which includes the focused site investigation area near the northern property boundary where soil contamination was found and where remediation activities were carried out) contained a gate station (gas purchase point) which included meter runs, heaters, high pressure regulators, interstation main piping, and medium pressure regulators. Most of this equipment has recently been relocated to a new gate station located about a mile northwest of the Peoples Gas Site. Currently, the area within the substation fencing includes gas heaters, interstation main piping, and medium pressure regulators.

The surrounding land use is as follows: to the east and south are single family residences across Whipple Street and Albion Avenue, respectively; to the west is Kedzie Avenue, then a narrow, vacant grassy strip, then the North Shore Channel; and to the north is the 3101 Site, a currently unoccupied former manufacturing facility.

The legal description for the entire Peoples Gas - Rogers Park Substation facility¹ is as follows:

The South 14 feet of Lot 15, Lots 16 to 27 both inclusive and the North 14 feet of Lot 28, all in Salinger and Hubbards second addition to Rogers Park in the Southwest Quarter of Section 36, Township 41 North, Range 13 East of the Third Principal Meridian.

¹The legal description for the total Peoples Gas facility is presented. However, the findings and actions reported herein apply to only a small portion of Area No. 1 (Lot 2) as further defined in the Special Conditions section of this report.

That part of the North and South alley (now vacated) lying West of North Whipple Street.

That part of North Shore Avenue (now vacated) lying West of North Whipple Street.

Lot 2 in Subdivision of West Half (by area) of Southwest Fractional Quarter of said Section 36 lying North of the Indian Boundary Line, together with the 33 feet East of and adjoining Lot 2 aforesaid, extending from the North line of said Lot 2 extended East, to the South line of said Lot 2 extended East.

That part of Lot 3 in the Subdivision of the West Half (by area) of the Southwest Fractional Quarter North of the Indian Boundary Line of said Section 36, which lies North of a line 1328.42 feet North of the South line of the Southwest Fractional Quarter of Section 36, Township 41 North, Range 13 East.

Also that part of the West Half of the Southwest Fractional Quarter of said Section 36 South of the Indian Boundary Line, lying North of the South 1328.42 feet and West of the East 505.82 feet of said West Half of the Southwest Fractional Quarter of Section 36, Township 41 North, Range 13 East of the Third Principal Meridian, except that part of Lots 2 and 3 in Subdivision of West Half (W. ½), (in area) of Southwest Fractional Quarter (S.W. Frac. 1/4) of Section 36, Township 41 North, Range 13 East of the Third Principal Meridian, in Cook County, Illinois, lying North of the Indian Boundary Line and lying West of the following described line:

Beginning at a point on the North line of Lot 2, a distance of Forty-eight and Twenty six hundredths (48.26) feet East of the Northwest corner of said lot,

thence South in a straight line to a point on the South line of Lot 3, a distance of Sixty-two and Twenty-three hundredths (62.23) feet East of the Southwest Corner of said Lot 3.

3.0 BASIS OF INVESTIGATION

The 3101 Site, which occupies approximately 6 acres and is located directly to the north of the Subject Site, was voluntarily entered into the Illinois EPA's Site Remediation Program in 1995. Historic activities at the 3101 site consisted of the manufacture of wetted and dry reed capsules, relays, surge arresters, and other small electronic components used in electronic devices. Operations began on the 3101 Site in 1952 and ceased in the early 1990s. An extensive investigation of the 3101 Site was conducted to determine the presence and extent of contamination. Soils contaminated with various chlorinated solvents and heavy metals (specifically mercury, chromium, and lead) were found to exist from the near surface to depths of approximately 17 feet along the western half of the

south property line area on the 3101 Site². Soil contamination of the Subject Site is believed to have occurred as a result of spills and/or releases of solvents, specifically tetrachloroethene (PCE) and trichloroethene (TCE), on the ground surface south of the 3101 Site's former Butler building during the 1950s. Refer to Figure 3 for a perspective of the relative location of the various property lines and former Butler building. PCE and TCE had been historically used on the 3101 Site for parts cleaning activities. In addition to PCE and TCE, the contaminants of concern identified on the Subject Site included various daughter products, such as 1,2-dichloroethene and vinyl chloride. Because this area is flat, sheet flow across the common property line onto the Peoples Gas Site may have occurred. This information was provided to the Illinois EPA in a May 8, 1995 Dames & Moore document entitled *Site Investigation Report/Site Remediation Work Plan, CP Clare/General Instrument Corporation Site, 3101 West Pratt Avenue, Chicago, Illinois*. In response to this report, the Illinois EPA requested that the Remediating Parties make contact with appropriate representatives of Peoples Gas, provide pertinent analytical findings, and request permission to conduct a limited (i.e., focused) soil investigation on the Peoples Gas property in proximity to the common property line.

4.0 PEOPLES GAS SITE INVESTIGATION

During the period from January 1996 through December 1997, Dames & Moore conducted four separate sampling events aimed at delineating the lateral and vertical extent of soil impacts on the Peoples Gas Site in the 0.15-acre focused site investigation area shown on Figure 2. A total of 21 soil borings were advanced at various locations within the focused site investigation area in proximity to the north property line using either a geoprobe unit or hand augering. The chemicals of concern were limited to mercury, chromium, lead, and VOCs for this investigation. Refer to Figure 3 for the locations of the soil borings. Appendix A contains copies of the soil boring logs. Samples were collected using polyethylene liners within the geoprobe tool. Portions of the liner were then capped and placed on ice pending shipment to the laboratory, or were slit open along the long axis with the soil contents transferred to laboratory-provided, clean glass jars and placed on ice. Samples obtained via hand auger were likewise transferred to laboratory-provided, clean glass jars pending shipment to the lab. An additional soil volume was also subjected to headspace analysis

²Contaminated soils were also encountered at other locations on the 3101 Site, but none close to the common property boundary. As such, these other locations are not pertinent for purposes of this report. See Dames & Moore's *Remedial Action Completion Report, 3101 West Pratt Avenue Site* dated December 24, 1997.

using a photoionization detector (PID). Samples were selected for analysis based on visual and olfactory observations, headspace readings, and spatial position. Many of the samples were collected within the upper five feet to assess the potential for surface sheet flow followed by infiltration into the soils on the Peoples Gas Site from historic surface land releases which may have occurred on the 3101 Site. In addition, numerous samples were collected between depths of 14 and 18 feet below ground surface (bgs) to evaluate the potential for preferential migration along the existing combined sanitary and storm sewer which traverses the 3101 Site in proximity to the Peoples Gas property. The invert of the sewer occurs at a depth of approximately 15 feet bgs.

Analytical samples were kept on ice and couriered to the laboratory within 48 hours of collection. All samples were analyzed in accordance with SW-846 methodologies. All drilling and sampling equipment was steam-cleaned prior to the start of the drilling program and between borings. All sampling equipment was decontaminated between sampling intervals. Decontamination consisted of an Alconox solution wash and several clean water rinses, with collection of the resulting rinsate. Most of the borings were advanced to a depth of 25 feet bgs. Soils were classified in accordance with the Unified Soil Classification System. With the exception of three borings, only silty clay and clayey silt soils, some with occasional minor amounts of sand or gravel, were encountered. Borings PG-6, PG-7 and PG-8 encountered sand lenses no more than two feet thick between 7 to 11 feet bgs. These three borings are nearest the large diameter piping within the substation, and the coarser soils represent fills associated with pipe backfill.

5.0 GEOLOGY/HYDROGEOLOGY

Soil conditions encountered during the Peoples Gas site investigation consisted of three to four inches of gravel fill overlying native silty clays or clayey silts throughout the depth drilled, typically 25 feet below ground surface (bgs). Figure 4 presents a geologic cross-section for the site. An exception to this pattern was noted in borings PG-6, PG-7, and PG-8, where clay and sand fills were encountered to depths up to 11 feet bgs. These three borings were advanced in very close proximity to Peoples Gas overhead and buried infrastructure, and represented previously disturbed soil conditions. On the adjacent 3101 Site, two soil borings (SB-3 and SB-27) were advanced to a depth of 50 feet bgs. Appendix B includes copies of the logs for these two borings and a figure which shows their location.

Except as noted above, below the upper two to three feet of fill, each boring encountered consistent

soil conditions consisting of brown to gray silty clay with a trace of fine to coarse sand and fine gravel throughout the remaining depth drilled. The silty clay units were soft for the upper 40 feet, grading to stiff to a depth of 50 feet bgs. Laboratory permeability testing was performed on four native silty clay samples obtained on the 3101 Site. A summary of this data is as follows:

Boring ID	Soil Depth Tested (ft bgs)	Measured Permeability (cm/sec)	Average Soil Permeability (cm/sec)
SB-3	9-11	2.7×10^{-8}	7.85×10^{-8}
SB-27	27-28	3.7×10^{-8}	
SB-49	8-10	9.0×10^{-8}	
SB-50	8-10	1.6×10^{-7}	

Soil samples obtained for geotechnical analyses at these depths were believed to originate from areas that had not been impacted from historic site operations. The samples intended for geotechnical analysis were collected using Shelby tubes, and no samples for chemical analysis were available from the Shelby tubes, and no other sampling intervals from these borings were sent for chemical analysis, except for one sample obtained from boring SB-3. A soil sample from boring SB-3 at 11 to 13 feet bgs was submitted for VOC and metals analyses to verify the absence of VOCs and to obtain background information for naturally-occurring metals. The results from the SB-3 sample did not exceed residential soil remediation objectives. On a separate nearby site (approximately 2/3 miles), an underlying dolomite bedrock aquifer was encountered at an approximate depth of 80 feet bgs. Bedrock on the Subject Site is predicted to occur at similar depth. Copies of the logs for the two 50-foot borings (SB-3 and SB-27) and geotechnical borings from the 3101 Site, and the 80-foot boring (DM-1) on a nearby site are included in Appendix B. Maps depicting the locations of these borings are also included in this appendix.

As mentioned, the above geotechnical samples were obtained from soil borings advanced on the 3101 Site for the purpose of developing site-specific Tier 2 soil remediation objectives. Because of the similar nature of the soils on both sites, it is reasonable to apply the 3101 Site geotechnical data to the Peoples Gas Site as well. A summary of the geotechnical data is provided in Table 1. Copies of the original geotechnical data are included as Appendix C.

The occurrence of groundwater within the soil borings was very inconsistent. In this flat study area, the depth at which groundwater was measured ranged from 7 to 17 feet bgs to not observed throughout the total depth drilled, 25 feet. This erratic pattern, coupled with the fine-grained quality of the native soils, suggests that no true water table condition is present in the northern portion of the Peoples Gas property. Groundwater is present only in a perched condition. The silty clays and clayey silts represent an aquitard, retarding both groundwater flow and contaminant migration. No groundwater samples were collected on the Peoples Gas Site.

6.0 APPLICABLE REMEDIATION OBJECTIVES

The analytical suite chosen for the Peoples Gas Site was based on the contaminants of concern identified at the 3101 Site, the adjacent source site. These included volatile organic compounds (VOCs), chromium, lead, and mercury.

6.1 SOIL REMEDIATION OBJECTIVES

For soils, TACO assumes three possible human exposure pathways, including: 1) the inhalation of vapors or particulates emanating from contaminated soils, 2) the direct ingestion of contaminated soils, and 3) the potential for the migration of soil contamination, via leaching, into an underlying potable groundwater source (also referred to as the soil component of the groundwater ingestion pathway). With respect to the 3101 Site, the soil component of the groundwater ingestion pathway was excluded from consideration for several reasons: a massive silty clay unit was found to extend beneath the adjacent site to a depth of 50 feet, extremely low measured soil permeabilities, the absence of detected soil contamination above residential soil remediation objectives at depths greater than 13 feet below ground surface, the absence of any potentially potable aquifer within the upper fifty feet of soils, Chicago's provision of and reliance upon potable waters originating from Lake Michigan, the City of Chicago ordinance prohibiting the installation or use of drinking water wells within the city limits, and the Memorandum of Understanding executed between the City of Chicago and the Illinois EPA.

Given the proximity of the area of the Peoples Gas Site being remediated to the 3101 Site and the fact that groundwater impacts above Class II criteria were not measured in the 3101 Site monitoring wells, coupled with the soil boring logs which revealed predominantly silty clays and clayey silts on the Peoples Gas property, it follows that the soil component of the groundwater ingestion exposure

pathway should likewise be eliminated from consideration on the Peoples Gas property. Furthermore, no evidence of free product was observed during soil boring or remediation activities, and the soil saturation limit and soil attenuation capacities corresponding to various contaminants were not exceeded based on review of the analytical data. All groundwater ingestion exposure route elimination criteria set forth in 742.300, 742.305, and 742.320 are satisfied at this site. Reliance on the Chicago groundwater ordinance and MOU as institutional controls has been assumed. The proposed soil remediation objectives are based on the two remaining potential human exposure pathways: the inhalation of vapors or particulates emanating from contaminated soils, and the direct ingestion of contaminated soils.

Two sets of soil remediation objectives have been proposed for the subject Site: one set assuming a residential future use of the property, and one set assuming a commercial/industrial future land use. A combination of Tier 1/Tier 2 soil remediation objectives has been established for the Site in accordance with the Illinois EPA's TACO regulations found in 35 IAC Part 742. The proposed soil remediation objectives, assuming both potential future land use scenarios, are included in Tables 4 and 5 for ease of comparison against the analytical data obtained from the Peoples Gas Site. The chemicals for which Tier 2 soil remediation objectives were calculated are as follows:

<u>Chemical</u>	<u>Tier 2 Residential</u>	<u>Tier 2 Industrial/Commercial</u>
Tetrachloroethene	12 ppm ³	110 ppm ³
Trichloroethene	58 ppm ³	173 ppm
Vinyl Chloride	0.3 ppm ³	0.89 ppm

Table 2 presents a summary of the TACO input parameters used to generate the Tier 2 soil remediation objectives for three VOCs. A more detailed presentation of the potentially applicable Tier 1/Tier 2 soil remediation objectives under various land use scenarios is shown on Table 3. Spreadsheets resulting from the use of an in-house computer program used to calculate the Tier 2 site-specific soil remediation objectives are provided in Appendix D. Per the request of Illinois EPA, URS performed Tier 2 calculations using each independent set of geotechnical data obtained for the

³ The soil remediation objective presented represents the Tier 1 soil remediation objective associated with the ingestion exposure pathway value since the Tier 2 soil inhalation remediation objective calculated was higher than the Tier 1 ingestion value.

site. We determined that use of the data from boring SB-47, 4 to 6 feet bgs, resulted in the most stringent Tier 2 values, and the values presented above are based on the use of this most conservative set of geotechnical data. Though not presented in Tables 4 and 5, construction worker soil remediation objectives were compared against site analytical data. It was verified that no concerns exist with regard to potential construction worker exposure. Table 6 presents the Tier 1 and Tier 2 construction worker soil remediation objectives used for this comparison for the chemicals of concern.

URS reviewed Appendix A, Tables E and F of the TACO regulations, which identify similar-acting noncarcinogenic and carcinogenic chemicals, respectively. According to the TACO Mixture Rule, it is not necessary to assess cumulative effects of noncarcinogens in soil under a Tier 1 assessment because of the inherent conservative nature of the Tier 1 objectives. The noncarcinogens detected in site soils identified in Table E did not require the derivation of site-specific Tier 2 soil remediation objectives because the concentrations at which they were detected were all well below the Tier 1 published values. As such, the potential cumulative effect of noncarcinogens was not assessed by URS for this site. Several of the contaminants of concern at the subject site are identified in Table F as carcinogenic, mostly affecting the liver. According to the TACO Mixture Rule, soil is exempt from the rule for carcinogens because of the allowable risk range under both Tier 1 and Tier 2 evaluations. Consequently, URS was not required to assess the potential cumulative effect for carcinogens.

6.2 GROUNDWATER REMEDIATION OBJECTIVES

No groundwater contamination above Illinois EPA's TACO Class II groundwater remediation objectives was found in any of the four groundwater monitoring wells installed and sampled on the adjacent 3101 Site. Three of the monitoring wells, designated as VMW-1, VMW-3, and MW-18, had previously been located within 50 feet of the common property line. The four groundwater wells had been installed in close proximity to some of the more contaminated soil zones on the 3101 Site, yet the samples obtained from these wells did not indicate unacceptable levels of groundwater contamination. As such, no further evaluation of impacts to groundwater was indicated on the 3101 Site. Since there was no groundwater contamination on the 3101 Site in more heavily contaminated soils, and since there is no usable or potentially potable aquifer underlying the Subject Site for significant depths, no evaluation of the potential for groundwater contamination on the Peoples Gas Site was warranted. Reliance on the Chicago groundwater ordinance and MOU has been assumed

as an institutional control for the elimination of the groundwater ingestion exposure pathway.

7.0 ANALYTICAL RESULTS

As previously mentioned, a total of 21 soil borings were advanced on the Peoples Gas in the focused area of investigation in proximity to the common boundary with the 3101 Site. A total of 49 soil samples were collected from the borings for laboratory analysis. The samples were analyzed for Target Compound List - volatile organic compounds (TCL-VOCs) and 19 of the samples were also analyzed for total mercury, chromium and lead. Table 4 presents a summary of the laboratory analytical results from the investigations. The residential and commercial/industrial soil remediation objectives have also been included in the tables. As previously mentioned, the locations of soil borings are presented on Figure 3. Copies of the Phase II investigation laboratory analytical reports are included in Appendix E. The presence of contaminants, other than volatile organic compounds, mercury, lead, and chromium, was not evaluated since other contaminants were not found to be of concern on the adjacent 3101 Site which formed the basis of the investigation.

Concentrations of the three metals were not found to exist above Tier 1 residential soil remediation objectives at any of the sample locations on the Peoples Gas Site. The samples analyzed for metals were obtained from the borings nearest the common property line (PG-1 through PG-9). Since no elevated metals levels were detected in these samples, the three metals were not included in the analytical suite for the remaining samples.

Based on the results of TCL-VOC analysis, soils were found to exceed one or both sets of soil remediation objectives (i.e., residential and/or industrial/commercial) at certain locations (PG-1, PG-2, PG-13, PG-15, and PG-16) on the Peoples Gas property for various chlorinated solvents, in particular, for vinyl chloride and/or tetrachloroethene (PCE). PCE was apparently used at the 3101 Site as a solvent; vinyl chloride is a naturally occurring degradation product of PCE. Other VOCs were also detected in some instances, but not above proposed residential soil remediation objectives.

8.0 REMEDIAL STRATEGY/REMEDIAL ACTION

Initially, Peoples Gas and the parties remediating the 3101 Site had agreed upon a remedial strategy for addressing the VOC soil contamination found within the focused area of investigation: excavation followed by low temperature thermal desorption. The affected area of the Peoples Gas property was in close proximity to large diameter subsurface natural gas transmission mains and

appurtenant equipment. As such, careful coordination and execution of the work was imperative in order to protect the infrastructure. Because of the depth to which soil contamination was found to exist on the Peoples Gas property, installation of steel sheet piling was required to maintain necessary lateral earth pressures against the transmission mains. Approximately 275 lineal feet of cantilevered steel sheeting was installed to an approximate depth of 40 feet below ground surface. The sheeting will remain in place. Related work included removal of chain link fencing, deactivation of a Supervisory Control and Data Acquisition (SCADA) system, and other miscellaneous tasks. Remedial activities on the Peoples Gas Site were scheduled to occur concurrent with remedial activities on the 3101 property due to the interrelated nature of planned activities, including excavation and treatment of soils from both sites along the common property line and nearby sewer work on the 3101 Site.

Following installation of the sheet piling, excavation of impacted soils commenced (August 1996). An estimated 2,340 cubic yards of soils were excavated, stockpiled within the 3101 Site building, characterized for chemical content, and, where indicated, treated on the 3101 Site via low temperature thermal desorption in accordance with Dames & Moore's December 13, 1995 *Design Report*. In general, soils were excavated to a depth of approximately 12.5 feet bgs. Figure 5 presents the actual depth of confirmatory soil sampling at each location along the excavation floor. This depth corresponds with the excavation depth. Confirmatory floor sampling of the excavation was conducted in accordance with the *Design Report* guidelines and included both VOC and total analysis for mercury, chromium, and lead. Excavation wall sampling was also conducted on the east and west ends of the excavations. However, it was not possible to collect wall samples along the southern portion of the excavation due to the presence of the steel sheet piling. The steel sheeting was installed to coincide with the southernmost row of soil borings (PG-8, PG-9, PG-10, PG-11, and PG-12) which did not indicate the presence of levels of contamination above residential soil remediation objectives based on laboratory testing of representative samples. The analytical data obtained from the soil borings represents confirmatory wall samples in this area and is presented in Table 4. Table 5 presents the results of confirmatory sampling from excavation activities; Figure 5 presents the highlights of this information graphically; Appendix F contains the excavation confirmatory sampling lab analytical reports. Some of the stockpiled soils found not to exceed Illinois EPA-approved residential soil remediation objectives, as well as soils that had been thermally treated to meet residential remediation objectives, were returned to the open excavations on the Peoples Gas property, consistent with the soil management methods prescribed in the *Design Report*.

Low temperature thermal desorption treatment activities at the 3101 Site voluntarily ceased on October 2, 1996 as a result of concerns expressed by the public and governmental authorities. At that time, approximately 92% (2,340 of 2,530 cubic yards) of the impacted soils on the Peoples Gas property had already been remediated via excavation. A portion of the excavated soils had already been thermally treated and returned to the Peoples Gas open excavations. However, soils which had been staged in the containment building awaiting thermal treatment were instead treated off site via RCRA incineration between December 1996 and February 1997. No additional impacted soils were excavated from the Peoples Gas Site following the October 2, 1996 shutdown. In late 1997, representatives of Peoples Gas and the parties remediating the 3101 Site agreed that no additional soils would be excavated and that additional soils to be used for backfilling the Peoples Gas Site excavation would be imported to the site from a quarry. Crushed aggregate meeting the Illinois Department of Transportation's material specifications for CA-6 or CA-7, commonly used in road construction as asphalt subbase, was brought to the site for use as backfill. This work was completed in October through December 1997. Site regrading, regravelling, fence restoration and other related tasks were also completed at that time.

At the request of the Illinois EPA, URS conducted groundwater modelling in accordance with the methodologies identified in the TACO regulations. The purpose of the modelling was to determine whether the residual soil contamination remaining in place after cessation of remediation activities, particularly that exceeding the Tier 1 soil component of groundwater ingestion, posed a potential risk of leaching to groundwater and either migrating outside of the focused investigation study area at concentrations exceeding applicable groundwater remediation objectives or discharging into a surface water body at concentrations exceeding water quality criteria. The results of groundwater modelling, by back-calculation, demonstrate that the residual soil contamination is several orders of magnitude lower than would be required to potentially impact surface water at applicable regulatory thresholds. The models were run assuming that the surface water body was located only 50 feet from the source. URS also conducted modelling to verify that groundwater impacts are not predicted to migrate more than one foot from the source location. The nearest surface water body is approximately 400 feet from the source, further adding to the conservative nature of the results. The results of groundwater modelling are included as Appendix G.

9.0 SPECIAL CONDITIONS

Following remedial activities and site restoration, certain portions of the focused area of site

investigation on the Peoples Gas Site remained underlain by soils with contamination above residential but below commercial/industrial soil remediation objectives. Soil samples obtained from the remainder of the focused area of site investigation met both the residential and commercial/industrial remediation criteria. Two separate focused NFR letters are sought for the limited area of site investigation. The first focused NFR letter will apply to those portions of the limited site investigation area where soils were found to meet residential remediation objectives. This NFR will not include any deed restrictions limiting future land use. Figure 6 presents a scaled Site Base Map identifying the unrestricted portions of the focused study area. The second focused NFR letter will apply to the two portions of the limited site investigation area where soils impacted with contaminants at concentrations above residential but below commercial/industrial remediation objectives is still present. This NFR will include a deed restriction limiting future land use to either commercial or industrial purposes. Figure 7 presents a scaled Site Base Map identifying the two future land use deed restricted portions of the focused study area. Legal descriptions for these two areas are as follows:

The legal description for the limited area of site investigation is as follows:

A part of Lot 2 in the subdivision of the West ½ of Lot 1 of the subdivision of the southwest 1/4 of Section 36, Township 41 North, Range 13 East of the third principal meridian, recorded March 27, 1872, in Book 1, Page 60, in the Recorder's Office of Cook County, Illinois, described as follows: commencing at the northwest corner of said Lot 2; thence north 88 degrees 15 minutes 51 seconds east along the north line of said Lot 2 and parallel with the north line of said southwest 1/4 of Section 36-41-13, a distance of 224.50 feet to the point of beginning of the tract herein described; thence continuing north 88 degrees 15 minutes 51 seconds east along said north line a distance of 409.00 feet to a point, thence south 1 degree 44 minutes 09 seconds east a distance of 15.50 feet to a point; thence south 88 degrees 15 minutes 51 seconds west a distance of 409.00 feet to a point, thence north 1 degree 44 minutes 09 seconds west a distance of 15.50 feet to the point of beginning, and containing 6,339.50 square feet, more or less.

The legal descriptions for the two small areas upon which the future industrial/commercial land use deed restriction will be imposed are as follows:

(More westerly parcel): A part of Lot 2 in the subdivision of the West ½ of Lot 1 of the subdivision of the southwest 1/4 of Section 36, Township 41 North, Range 13 East of the third principal

meridian, recorded March 27, 1872, in Book 1, Page 60 , in the Recorder's Office of Cook County, Illinois, described as follows: commencing at the northwest corner of said Lot 2; thence north 88 degrees 15 minutes 51 seconds east along the north line of said Lot 2 and parallel with the north line of said southwest 1/4 of Section 36-41-13, a distance of 539.50 feet to the point of beginning of the tract herein described; thence continuing north 88 degrees 15 minutes 51 seconds east along said north line a distance of 22.50 feet to a point; thence south 1 degree 44 minutes 09 seconds east a distance of 15.50 feet to a point; thence south 88 degrees 15 minutes 51 seconds west a distance of 22.50 feet to a point; thence north 1 degree 44 minutes 09 seconds west a distance of 15.50 feet to the point of beginning, and containing 348.75 square feet, more or less.

(More easterly parcel): A part of Lot 2 in the subdivision of the West ½ of Lot 1 of the subdivision of the southwest 1/4 of Section 36, Township 41 North, Range 13 East of the third principal meridian, recorded March 27, 1872, in Book 1, Page 60 , in the Recorder's Office of Cook County, Illinois, described as follows: commencing at the northwest corner of said Lot 2; thence north 88 degrees 15 minutes 51 seconds east along the north line of said Lot 2 and parallel with the north line of said southwest 1/4 of Section 36-41-13, a distance of 587.50 feet to the point of beginning of the tract herein described; thence continuing north 88 degrees 15 minutes 51 seconds east along said north line a distance of 46.00 feet to a point; thence south 1 degree 44 minutes 09 seconds east a distance of 10.50 feet to a point.

Owner: Artrip_Gail

Date: 2/21/02

Time: 2:44:35 PM

Job: 2

**REVISED FOCUSED SITE
INVESTIGATION/
REMEDATION OBJECTIVES/
REMEDIAL ACTION PLAN/
REMEDIAL ACTION COMPLETION
REPORT**

**THE PEOPLES GAS LIGHT AND
COKE COMPANY
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS**

**FOR CLARE CORPORATION AND
GENERAL SEMICONDUCTOR, INC.**

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	v
1.0 INTRODUCTION	1
2.0 FACILITY BACKGROUND AND USE	1
3.0 BASIS OF INVESTIGATION	3
4.0 PEOPLES GAS SITE INVESTIGATION	4
5.0 GEOLOGY/HYDROGEOLOGY	5
6.0 APPLICABLE REMEDIATION OBJECTIVES	7
6.1 SOIL REMEDIATION OBJECTIVES	7
6.2 GROUNDWATER REMEDIATION OBJECTIVES	9
7.0 ANALYTICAL RESULTS	9
8.0 REMEDIAL STRATEGY/REMEDIAL ACTION	10
9.0 SPECIAL CONDITIONS	12
10.0 RESULTS/ENDANGERMENT ASSESSMENT	14
11.0 CONCLUSIONS	14

TABLES

TABLE 1	SUMMARY OF GEOTECHNICAL RESULTS
TABLE 2	SUMMARY OF TACO INPUT PARAMETERS
TABLE 3	SUMMARY OF POTENTIALLY APPLICABLE SOIL REMEDIATION OBJECTIVES
TABLE 4	PHASE II SITE INVESTIGATION - SOIL ANALYTICAL DATA
TABLE 5	CONFIRMATORY SOIL SAMPLING ANALYTICAL DATA
TABLE 6	CONSTRUCTION WORKER SOIL REMEDIATION OBJECTIVES

FIGURES

FIGURE 1	SITE LOCATION MAP
FIGURE 2	SITE MAP
FIGURE 3	SOIL BORING LOCATION MAP
FIGURE 4	GEOLOGIC CROSS-SECTION
FIGURE 5	CONFIRMATORY SOIL SAMPLING MAP
FIGURE 6	FOCUSED AREA OF INVESTIGATION INCLUDING AREAS WITH NO FUTURE LAND USE RESTRICTIONS/SITE BASE MAP
FIGURE 7	FOCUSED AREA OF INVESTIGATION INCLUDING AREAS WITH INDUSTRIAL/COMMERCIAL FUTURE LAND USE RESTRICTIONS/SITE BASE MAP

APPENDICES

APPENDIX A	SOIL BORING LOGS
APPENDIX B	OFF-SITE BORING LOGS/LOCATION MAPS
APPENDIX C	GEOTECHNICAL DATA

APPENDIX D	TIER 2 SOIL REMEDIATION OBJECTIVES SPREADSHEETS
APPENDIX E	PHASE II INVESTIGATION LAB ANALYTICAL REPORTS
APPENDIX F	EXCAVATION CONFIRMATORY LAB ANALYTICAL REPORTS
APPENDIX G	GROUNDWATER MODELLING RESULTS
APPENDIX H	PROFESSIONAL ENGINEER CERTIFICATION

**REVISED FOCUSED SITE INVESTIGATION REPORT/
REMEDATION OBJECTIVES REPORT/
REMEDIAL ACTION PLAN/
REMEDIAL ACTION COMPLETION REPORT
THE PEOPLES GAS LIGHT AND COKE COMPANY
ROGERS PARK SUBSTATION
CHICAGO, ILLINOIS**

EXECUTIVE SUMMARY

A focused Phase II environmental site investigation was undertaken at the Peoples Gas Light and Coke Company - Rogers Park Substation facility located at 6659 North Kedzie Avenue (Cook County) in Chicago, Illinois (Peoples Gas or the Subject Site). The investigation was prompted as a result of the detection of subsurface soil contamination at the neighboring property located at 3101 West Pratt Avenue (3101 Site), at an area adjacent to the northern property boundary of the Subject Site. No groundwater contamination was found on the 3101 Site, and the Illinois Environmental Protection Agency (Illinois EPA) concurred with the finding that the soil component of the groundwater ingestion exposure pathway should be eliminated from consideration. Both of the groundwater ingestion exposure pathways are eliminated from consideration at the Peoples Gas site on the basis of reliance on the Chicago groundwater ordinance.

The 3101 Site was entered voluntarily into the Illinois EPA's Site Remediation Program. Illinois EPA assigned a site number of 0316020001 (Cook County) for the 3101 Site. An extensive investigation of the 3101 Site was conducted to determine the presence and extent of contamination. Soils contaminated with various chlorinated solvents and heavy metals (specifically mercury, chromium, and lead) were found to exist from the near surface to depths of approximately 17 feet along the western half of the south property line area on the 3101 Site. This information was provided to the Illinois EPA. In response, the Illinois EPA requested that CP Clare Corporation and General Semiconductor, Inc. (fka General Instrument Corporation), collectively the parties undertaking remediation of the 3101 Site (the Remediating Parties), contact appropriate representatives of Peoples Gas, provide pertinent analytical findings, and request permission to conduct a limited (i.e., focused) soil investigation on the Peoples Gas property in proximity to the common property line.

Multiple phases of focused soil investigation were carried out at the Peoples Gas property (January 1996; August 1996; and December 1997) for the purpose of delineating the lateral and vertical extent

of soil contamination. Two sets of proposed soil remediation objectives were developed as the basis against which to compare the resulting analytical data. The first set assumed a residential future use of the Peoples Gas property; the second set assumed a commercial/industrial future use of the Peoples Gas property. Based on the results of the investigations, soils were found to exceed one or both sets of proposed soil remediation objectives at certain locations on the Peoples Gas property for various chlorinated solvents. No mercury, chromium or lead contamination above residential or industrial/commercial soil remediation objectives was detected on the Peoples Gas property. The potential presence of contaminants, other than volatile organic compounds, mercury, lead, and chromium, was not evaluated since other contaminants were not found to be of concern on the adjacent 3101 Site which formed the basis of the investigation.

Representatives of Peoples Gas and the Remediating Parties agreed upon a remedial strategy for addressing the soil contamination on the Peoples Gas property which consisted of excavation followed by low temperature thermal desorption. Remedial activities on the Peoples Gas Site were scheduled to occur concurrent with remedial activities on the 3101 Site due to the interrelated nature of planned activities, including excavation and treatment of soils from both sites along the common property line and nearby sewer work on the 3101 Site. The affected area of the Peoples Gas property is in close proximity to large diameter subsurface natural gas transmission mains and appurtenant equipment. As such, careful coordination and execution of the work was imperative in order to protect the infrastructure. Because of the depth to which soil contamination was found to exist on the Peoples Gas property, installation of steel sheet piling was required to prevent undermining of the transmission mains. Approximately 275 lineal feet of cantilevered steel sheeting was installed to a depth of 40 feet below ground surface. The sheeting will remain in place.

Following installation of the sheet piling, excavation of impacted soils commenced. An estimated 2,340 cubic yards of soils were excavated from the Peoples Gas Site, stockpiled within the 3101 Site building (a RCRA containment building), characterized for its chemical content, and, where indicated, treated on the 3101 Site via low temperature thermal desorption in accordance with Dames & Moore's December 13, 1995 *Design Report*. Confirmatory excavation floor and wall samples were also collected in accordance with the approved *Design Report*. Stockpiled soils that were found not to exceed Illinois EPA-approved residential soil remediation objectives, as well as soils thermally treated to meet residential soil remediation objectives, were returned to the open excavations on the Peoples Gas property in accordance with the terms established by representatives of Peoples Gas and the Remediating Parties, and consistent with the prescribed soil management methods outlined in the approved *Design Report*.

Low temperature thermal desorption treatment activities at the 3101 Site voluntarily ceased on October 2, 1996 as a result of concerns expressed by the public and governmental authorities. At that time, approximately 92% (2,340 of 2,530 cubic yards) of the impacted soils on the Peoples Gas property had already been remediated via excavation. A portion of the excavated soils had already been thermally treated and returned to the Peoples Gas open excavations. The remaining excavated soils, which had been staged in the building at the 3101 site awaiting thermal treatment, were instead transported off site for incineration between December 1996 and February 1997. No additional impacted soils were excavated from the Peoples Gas Site following the October 2, 1996 shutdown. Following discussions between representatives of Peoples Gas and the Remediating Parties, it was agreed that no additional soils would be excavated and that soils to be used for backfilling would be imported to the Peoples Gas Site from a quarry. Crushed aggregate meeting the Illinois Department of Transportation materials specifications for CA-6 or CA-7, commonly used in road construction as asphalt subbase, was brought to the Peoples Gas Site for use as backfill. This work was completed in October through December 1997. Site regrading, regravelling, fence restoration and other related tasks were also completed at that time.

At the close of remedial activities and site restoration, certain areas within the focused area of investigation on the Peoples Gas Site remain underlain by soils with contamination above residential but below commercial/industrial soil remediation objectives. Other portions of the focused area of investigation meet applicable soil remediation criteria. As such, a deed restriction will be applied to portions of the focused area of investigation to ensure a future commercial/industrial land use. The total area of the focused site investigation occupies approximately 6,339 square feet or 0.15 acres. The two areas within the focused investigation area where an industrial/commercial deed restriction will be imposed measure 349 square feet and 483 square feet for a total of 832 square feet or 0.02 acres. Scaled drawings and legal descriptions for each of these areas are provided in this report. In addition, the drawings and legal descriptions delineate the aerial extent of the investigations carried out on the Peoples Gas property to which this report is limited. Two focused No Further Remediation letters are requested for the area investigated: one conditioned upon implementation of the future commercial/industrial land use for the two areas where contamination will remain, and one without future land use restrictions.



**REVISED FOCUSED SITE INVESTIGATION REPORT/
REMEDIAL OBJECTIVES REPORT/
REMEDIAL ACTION PLAN/
REMEDIAL ACTION COMPLETION REPORT
THE PEOPLES GAS LIGHT AND COKE COMPANY
ROGERS PARK SUBSTATION
CHICAGO, ILLINOIS**

1.0 INTRODUCTION

A focused Phase II environmental site investigation was undertaken at the Peoples Gas Light and Coke Company - Rogers Park Substation facility located at 6659 North Kedzie Avenue (Cook County) in Chicago, Illinois (Peoples Gas or the Subject Site). Refer to Figure 1 for the location of the Subject Site. The investigation was prompted as a result of the detection of subsurface soil contamination at the neighboring property located at 3101 West Pratt Avenue (3101 Site), at an area adjacent to the northern property boundary of the Subject Site in proximity to the common property line. The work reported herein was conducted in accordance with the Illinois Environmental Protection Agency's (Illinois EPA's) Site Remediation Program regulations contained in Title 35 Illinois Administrative Code (35 IAC) Part 740 and with the Tiered Approach to Corrective Action Objectives (TACO) regulations contained in 35 IAC Part 742. Two focused No Further Remediation (NFR) letters are sought for a 0.15-acre strip (i.e., the focused site investigation area) along the northern boundary of the Subject Site; one based on an unrestricted future land use for portions of the study area and one based on an industrial/commercial future land use deed restriction for the balance of the study area. This report makes reference to work performed by Dames & Moore and URS Corporation. Dames & Moore is a wholly owned subsidiary of URS Corporation.

2.0 FACILITY BACKGROUND AND USE

The Peoples Gas - Rogers Park Substation occupies 16.15 acres. Most of the Peoples Gas property is occupied by grassy areas, particularly along the southern and eastern portions of the property. The Peoples Gas Site is surrounded by chain link fencing and may only be accessed through a 24-hour guarded entrance. Refer to Figure 2 for a layout of the Site. The 0.15-acre focused site investigation area is also shown on this figure.

According to Peoples Gas representatives, the facility was constructed in 1926 by Peoples Gas as a gas storage facility. The Subject Site housed a 15 million cubic foot waterless (tar-seal) gas holder

as well as an exhaust house (now the Sub Shop Building), a compressor room (now the Boiler House, Store Room, and Computer Building), and several other smaller structures. The property was expanded to Albion Avenue on the south with an additional land purchase of 6.2 acres in 1956. Gas storage at the site ceased in 1969 with the gas holder being dismantled at about that time.

The Peoples Gas Site is currently in use as a natural gas transmission station. According to Peoples Gas representatives, no change from the current land use is planned, particularly in proximity to the study area.

The Subject Site is currently used as a Sub Shop for the North District, and until recently, as a gate station. The Sub Shop building serves as a reporting location for Distribution Department and Service Department crews. Transportation Department personnel service company vehicles in the garage building. Until a few months ago, the fenced substation area (which includes the focused site investigation area near the northern property boundary where soil contamination was found and where remediation activities were carried out) contained a gate station (gas purchase point) which included meter runs, heaters, high pressure regulators, interstation main piping, and medium pressure regulators. Most of this equipment has recently been relocated to a new gate station located about a mile northwest of the Peoples Gas Site. Currently, the area within the substation fencing includes gas heaters, interstation main piping, and medium pressure regulators.

The surrounding land use is as follows: to the east and south are single family residences across Whipple Street and Albion Avenue, respectively; to the west is Kedzie Avenue, then a narrow, vacant grassy strip, then the North Shore Channel; and to the north is the 3101 Site, a currently unoccupied former manufacturing facility.

The legal description for the entire Peoples Gas - Rogers Park Substation facility¹ is as follows:

The South 14 feet of Lot 15, Lots 16 to 27 both inclusive and the North 14 feet of Lot 28, all in Salinger and Hubbards second addition to Rogers Park in the Southwest Quarter of Section 36, Township 41 North, Range 13 East of the Third Principal Meridian.

¹The legal description for the total Peoples Gas facility is presented. However, the findings and actions reported herein apply to only a small portion of Area No. 1 (Lot 2) as further defined in the Special Conditions section of this report.

That part of the North and South alley (now vacated) lying West of North Whipple Street.

That part of North Shore Avenue (now vacated) lying West of North Whipple Street.

Lot 2 in Subdivision of West Half (by area) of Southwest Fractional Quarter of said Section 36 lying North of the Indian Boundary Line, together with the 33 feet East of and adjoining Lot 2 aforesaid, extending from the North line of said Lot 2 extended East, to the South line of said Lot 2 extended East.

That part of Lot 3 in the Subdivision of the West Half (by area) of the Southwest Fractional Quarter North of the Indian Boundary Line of said Section 36, which lies North of a line 1328.42 feet North of the South line of the Southwest Fractional Quarter of Section 36, Township 41 North, Range 13 East.

Also that part of the West Half of the Southwest Fractional Quarter of said Section 36 South of the Indian Boundary Line, lying North of the South 1328.42 feet and West of the East 505.82 feet of said West Half of the Southwest Fractional Quarter of Section 36, Township 41 North, Range 13 East of the Third Principal Meridian, except that part of Lots 2 and 3 in Subdivision of West Half (W. ½), (in area) of Southwest Fractional Quarter (S.W. Frac. 1/4) of Section 36, Township 41 North, Range 13 East of the Third Principal Meridian, in Cook County, Illinois, lying North of the Indian Boundary Line and lying West of the following described line:

Beginning at a point on the North line of Lot 2, a distance of Forty-eight and Twenty six hundredths (48.26) feet East of the Northwest corner of said lot,

thence South in a straight line to a point on the South line of Lot 3, a distance of Sixty-two and Twenty-three hundredths (62.23) feet East of the Southwest Corner of said Lot 3.

3.0 BASIS OF INVESTIGATION

The 3101 Site, which occupies approximately 6 acres and is located directly to the north of the Subject Site, was voluntarily entered into the Illinois EPA's Site Remediation Program in 1995. Historic activities at the 3101 site consisted of the manufacture of wetted and dry reed capsules, relays, surge arresters, and other small electronic components used in electronic devices. Operations began on the 3101 Site in 1952 and ceased in the early 1990s. An extensive investigation of the 3101 Site was conducted to determine the presence and extent of contamination. Soils contaminated with various chlorinated solvents and heavy metals (specifically mercury, chromium, and lead) were found to exist from the near surface to depths of approximately 17 feet along the western half of the

south property line area on the 3101 Site². Soil contamination of the Subject Site is believed to have occurred as a result of spills and/or releases of solvents, specifically tetrachloroethene (PCE) and trichloroethene (TCE), on the ground surface south of the 3101 Site's former Butler building during the 1950s. Refer to Figure 3 for a perspective of the relative location of the various property lines and former Butler building. PCE and TCE had been historically used on the 3101 Site for parts cleaning activities. In addition to PCE and TCE, the contaminants of concern identified on the Subject Site included various daughter products, such as 1,2-dichloroethene and vinyl chloride. Because this area is flat, sheet flow across the common property line onto the Peoples Gas Site may have occurred. This information was provided to the Illinois EPA in a May 8, 1995 Dames & Moore document entitled *Site Investigation Report/Site Remediation Work Plan, CP Clare/General Instrument Corporation Site, 3101 West Pratt Avenue, Chicago, Illinois*. In response to this report, the Illinois EPA requested that the Remediating Parties make contact with appropriate representatives of Peoples Gas, provide pertinent analytical findings, and request permission to conduct a limited (i.e., focused) soil investigation on the Peoples Gas property in proximity to the common property line.

4.0 PEOPLES GAS SITE INVESTIGATION

During the period from January 1996 through December 1997, Dames & Moore conducted four separate sampling events aimed at delineating the lateral and vertical extent of soil impacts on the Peoples Gas Site in the 0.15-acre focused site investigation area shown on Figure 2. A total of 21 soil borings were advanced at various locations within the focused site investigation area in proximity to the north property line using either a geoprobe unit or hand augering. The chemicals of concern were limited to mercury, chromium, lead, and VOCs for this investigation. Refer to Figure 3 for the locations of the soil borings. Appendix A contains copies of the soil boring logs. Samples were collected using polyethylene liners within the geoprobe tool. Portions of the liner were then capped and placed on ice pending shipment to the laboratory, or were slit open along the long axis with the soil contents transferred to laboratory-provided, clean glass jars and placed on ice. Samples obtained via hand auger were likewise transferred to laboratory-provided, clean glass jars pending shipment to the lab. An additional soil volume was also subjected to headspace analysis

²Contaminated soils were also encountered at other locations on the 3101 Site, but none close to the common property boundary. As such, these other locations are not pertinent for purposes of this report. See Dames & Moore's *Remedial Action Completion Report, 3101 West Pratt Avenue Site* dated December 24, 1997.

using a photoionization detector (PID). Samples were selected for analysis based on visual and olfactory observations, headspace readings, and spatial position. Many of the samples were collected within the upper five feet to assess the potential for surface sheet flow followed by infiltration into the soils on the Peoples Gas Site from historic surface land releases which may have occurred on the 3101 Site. In addition, numerous samples were collected between depths of 14 and 18 feet below ground surface (bgs) to evaluate the potential for preferential migration along the existing combined sanitary and storm sewer which traverses the 3101 Site in proximity to the Peoples Gas property. The invert of the sewer occurs at a depth of approximately 15 feet bgs.

Analytical samples were kept on ice and couriered to the laboratory within 48 hours of collection. All samples were analyzed in accordance with SW-846 methodologies. All drilling and sampling equipment was steam-cleaned prior to the start of the drilling program and between borings. All sampling equipment was decontaminated between sampling intervals. Decontamination consisted of an Alconox solution wash and several clean water rinses, with collection of the resulting rinsate. Most of the borings were advanced to a depth of 25 feet bgs. Soils were classified in accordance with the Unified Soil Classification System. With the exception of three borings, only silty clay and clayey silt soils, some with occasional minor amounts of sand or gravel, were encountered. Borings PG-6, PG-7 and PG-8 encountered sand lenses no more than two feet thick between 7 to 11 feet bgs. These three borings are nearest the large diameter piping within the substation, and the coarser soils represent fills associated with pipe backfill.

5.0 GEOLOGY/HYDROGEOLOGY

Soil conditions encountered during the Peoples Gas site investigation consisted of three to four inches of gravel fill overlying native silty clays or clayey silts throughout the depth drilled, typically 25 feet below ground surface (bgs). Figure 4 presents a geologic cross-section for the site. An exception to this pattern was noted in borings PG-6, PG-7, and PG-8, where clay and sand fills were encountered to depths up to 11 feet bgs. These three borings were advanced in very close proximity to Peoples Gas overhead and buried infrastructure, and represented previously disturbed soil conditions. On the adjacent 3101 Site, two soil borings (SB-3 and SB-27) were advanced to a depth of 50 feet bgs. Appendix B includes copies of the logs for these two borings and a figure which shows their location.

Except as noted above, below the upper two to three feet of fill, each boring encountered consistent

soil conditions consisting of brown to gray silty clay with a trace of fine to coarse sand and fine gravel throughout the remaining depth drilled. The silty clay units were soft for the upper 40 feet, grading to stiff to a depth of 50 feet bgs. Laboratory permeability testing was performed on four native silty clay samples obtained on the 3101 Site. A summary of this data is as follows:

Boring ID	Soil Depth Tested (ft bgs)	Measured Permeability (cm/sec)	Average Soil Permeability (cm/sec)
SB-3	9-11	2.7×10^{-8}	7.85×10^{-8}
SB-27	27-28	3.7×10^{-8}	
SB-49	8-10	9.0×10^{-8}	
SB-50	8-10	1.6×10^{-7}	

Soil samples obtained for geotechnical analyses at these depths were believed to originate from areas that had not been impacted from historic site operations. The samples intended for geotechnical analysis were collected using Shelby tubes, and no samples for chemical analysis were available from the Shelby tubes, and no other sampling intervals from these borings were sent for chemical analysis, except for one sample obtained from boring SB-3. A soil sample from boring SB-3 at 11 to 13 feet bgs was submitted for VOC and metals analyses to verify the absence of VOCs and to obtain background information for naturally-occurring metals. The results from the SB-3 sample did not exceed residential soil remediation objectives. On a separate nearby site (approximately 2/3 miles), an underlying dolomite bedrock aquifer was encountered at an approximate depth of 80 feet bgs. Bedrock on the Subject Site is predicted to occur at similar depth. Copies of the logs for the two 50-foot borings (SB-3 and SB-27) and geotechnical borings from the 3101 Site, and the 80-foot boring (DM-1) on a nearby site are included in Appendix B. Maps depicting the locations of these borings are also included in this appendix.

As mentioned, the above geotechnical samples were obtained from soil borings advanced on the 3101 Site for the purpose of developing site-specific Tier 2 soil remediation objectives. Because of the similar nature of the soils on both sites, it is reasonable to apply the 3101 Site geotechnical data to the Peoples Gas Site as well. A summary of the geotechnical data is provided in Table 1. Copies of the original geotechnical data are included as Appendix C.

The occurrence of groundwater within the soil borings was very inconsistent. In this flat study area, the depth at which groundwater was measured ranged from 7 to 17 feet bgs to not observed throughout the total depth drilled, 25 feet. This erratic pattern, coupled with the fine-grained quality of the native soils, suggests that no true water table condition is present in the northern portion of the Peoples Gas property. Groundwater is present only in a perched condition. The silty clays and clayey silts represent an aquitard, retarding both groundwater flow and contaminant migration. No groundwater samples were collected on the Peoples Gas Site.

6.0 APPLICABLE REMEDIATION OBJECTIVES

The analytical suite chosen for the Peoples Gas Site was based on the contaminants of concern identified at the 3101 Site, the adjacent source site. These included volatile organic compounds (VOCs), chromium, lead, and mercury.

6.1 SOIL REMEDIATION OBJECTIVES

For soils, TACO assumes three possible human exposure pathways, including: 1) the inhalation of vapors or particulates emanating from contaminated soils, 2) the direct ingestion of contaminated soils, and 3) the potential for the migration of soil contamination, via leaching, into an underlying potable groundwater source (also referred to as the soil component of the groundwater ingestion pathway). With respect to the 3101 Site, the soil component of the groundwater ingestion pathway was excluded from consideration for several reasons: a massive silty clay unit was found to extend beneath the adjacent site to a depth of 50 feet, extremely low measured soil permeabilities, the absence of detected soil contamination above residential soil remediation objectives at depths greater than 13 feet below ground surface, the absence of any potentially potable aquifer within the upper fifty feet of soils, Chicago's provision of and reliance upon potable waters originating from Lake Michigan, the City of Chicago ordinance prohibiting the installation or use of drinking water wells within the city limits, and the Memorandum of Understanding executed between the City of Chicago and the Illinois EPA.

Given the proximity of the area of the Peoples Gas Site being remediated to the 3101 Site and the fact that groundwater impacts above Class II criteria were not measured in the 3101 Site monitoring wells, coupled with the soil boring logs which revealed predominantly silty clays and clayey silts on the Peoples Gas property, it follows that the soil component of the groundwater ingestion exposure

pathway should likewise be eliminated from consideration on the Peoples Gas property. Furthermore, no evidence of free product was observed during soil boring or remediation activities, and the soil saturation limit and soil attenuation capacities corresponding to various contaminants were not exceeded based on review of the analytical data. All groundwater ingestion exposure route elimination criteria set forth in 742.300, 742.305, and 742.320 are satisfied at this site. Reliance on the Chicago groundwater ordinance and MOU as institutional controls has been assumed. The proposed soil remediation objectives are based on the two remaining potential human exposure pathways: the inhalation of vapors or particulates emanating from contaminated soils, and the direct ingestion of contaminated soils.

Two sets of soil remediation objectives have been proposed for the subject Site: one set assuming a residential future use of the property, and one set assuming a commercial/industrial future land use. A combination of Tier 1/Tier 2 soil remediation objectives has been established for the Site in accordance with the Illinois EPA's TACO regulations found in 35 IAC Part 742. The proposed soil remediation objectives, assuming both potential future land use scenarios, are included in Tables 4 and 5 for ease of comparison against the analytical data obtained from the Peoples Gas Site. The chemicals for which Tier 2 soil remediation objectives were calculated are as follows:

<u>Chemical</u>	<u>Tier 2 Residential</u>	<u>Tier 2 Industrial/Commercial</u>
Tetrachloroethene	12 ppm ³	110 ppm ³
Trichloroethene	58 ppm ³	173 ppm
Vinyl Chloride	0.3 ppm ³	0.89 ppm

Table 2 presents a summary of the TACO input parameters used to generate the Tier 2 soil remediation objectives for three VOCs. A more detailed presentation of the potentially applicable Tier 1/Tier 2 soil remediation objectives under various land use scenarios is shown on Table 3. Spreadsheets resulting from the use of an in-house computer program used to calculate the Tier 2 site-specific soil remediation objectives are provided in Appendix D. Per the request of Illinois EPA, URS performed Tier 2 calculations using each independent set of geotechnical data obtained for the

3

The soil remediation objective presented represents the Tier 1 soil remediation objective associated with the ingestion exposure pathway value since the Tier 2 soil inhalation remediation objective calculated was higher than the Tier 1 ingestion value.

site. We determined that use of the data from boring SB-47, 4 to 6 feet bgs, resulted in the most stringent Tier 2 values, and the values presented above are based on the use of this most conservative set of geotechnical data. Though not presented in Tables 4 and 5, construction worker soil remediation objectives were compared against site analytical data. It was verified that no concerns exist with regard to potential construction worker exposure. Table 6 presents the Tier 1 and Tier 2 construction worker soil remediation objectives used for this comparison for the chemicals of concern.

URS reviewed Appendix A, Tables E and F of the TACO regulations, which identify similar-acting noncarcinogenic and carcinogenic chemicals, respectively. According to the TACO Mixture Rule, it is not necessary to assess cumulative effects of noncarcinogens in soil under a Tier 1 assessment because of the inherent conservative nature of the Tier 1 objectives. The noncarcinogens detected in site soils identified in Table E did not require the derivation of site-specific Tier 2 soil remediation objectives because the concentrations at which they were detected were all well below the Tier 1 published values. As such, the potential cumulative effect of noncarcinogens was not assessed by URS for this site. Several of the contaminants of concern at the subject site are identified in Table F as carcinogenic, mostly affecting the liver. According to the TACO Mixture Rule, soil is exempt from the rule for carcinogens because of the allowable risk range under both Tier 1 and Tier 2 evaluations. Consequently, URS was not required to assess the potential cumulative effect for carcinogens.

6.2 GROUNDWATER REMEDIATION OBJECTIVES

No groundwater contamination above Illinois EPA's TACO Class II groundwater remediation objectives was found in any of the four groundwater monitoring wells installed and sampled on the adjacent 3101 Site. Three of the monitoring wells, designated as VMW-1, VMW-3, and MW-18, had previously been located within 50 feet of the common property line. The four groundwater wells had been installed in close proximity to some of the more contaminated soil zones on the 3101 Site, yet the samples obtained from these wells did not indicate unacceptable levels of groundwater contamination. As such, no further evaluation of impacts to groundwater was indicated on the 3101 Site. Since there was no groundwater contamination on the 3101 Site in more heavily contaminated soils, and since there is no usable or potentially potable aquifer underlying the Subject Site for significant depths, no evaluation of the potential for groundwater contamination on the Peoples Gas Site was warranted. Reliance on the Chicago groundwater ordinance and MOU has been assumed

as an institutional control for the elimination of the groundwater ingestion exposure pathway.

7.0 ANALYTICAL RESULTS

As previously mentioned, a total of 21 soil borings were advanced on the Peoples Gas in the focused area of investigation in proximity to the common boundary with the 3101 Site. A total of 49 soil samples were collected from the borings for laboratory analysis. The samples were analyzed for Target Compound List - volatile organic compounds (TCL-VOCs) and 19 of the samples were also analyzed for total mercury, chromium and lead. Table 4 presents a summary of the laboratory analytical results from the investigations. The residential and commercial/industrial soil remediation objectives have also been included in the tables. As previously mentioned, the locations of soil borings are presented on Figure 3. Copies of the Phase II investigation laboratory analytical reports are included in Appendix E. The presence of contaminants, other than volatile organic compounds, mercury, lead, and chromium, was not evaluated since other contaminants were not found to be of concern on the adjacent 3101 Site which formed the basis of the investigation.

Concentrations of the three metals were not found to exist above Tier 1 residential soil remediation objectives at any of the sample locations on the Peoples Gas Site. The samples analyzed for metals were obtained from the borings nearest the common property line (PG-1 through PG-9). Since no elevated metals levels were detected in these samples, the three metals were not included in the analytical suite for the remaining samples.

Based on the results of TCL-VOC analysis, soils were found to exceed one or both sets of soil remediation objectives (i.e., residential and/or industrial/commercial) at certain locations (PG-1, PG-2, PG-13, PG-15, and PG-16) on the Peoples Gas property for various chlorinated solvents, in particular, for vinyl chloride and/or tetrachloroethene (PCE). PCE was apparently used at the 3101 Site as a solvent; vinyl chloride is a naturally occurring degradation product of PCE. Other VOCs were also detected in some instances, but not above proposed residential soil remediation objectives.

8.0 REMEDIAL STRATEGY/REMEDIAL ACTION

Initially, Peoples Gas and the parties remediating the 3101 Site had agreed upon a remedial strategy for addressing the VOC soil contamination found within the focused area of investigation: excavation followed by low temperature thermal desorption. The affected area of the Peoples Gas property was in close proximity to large diameter subsurface natural gas transmission mains and

appurtenant equipment. As such, careful coordination and execution of the work was imperative in order to protect the infrastructure. Because of the depth to which soil contamination was found to exist on the Peoples Gas property, installation of steel sheet piling was required to maintain necessary lateral earth pressures against the transmission mains. Approximately 275 lineal feet of cantilevered steel sheeting was installed to an approximate depth of 40 feet below ground surface. The sheeting will remain in place. Related work included removal of chain link fencing, deactivation of a Supervisory Control and Data Acquisition (SCADA) system, and other miscellaneous tasks. Remedial activities on the Peoples Gas Site were scheduled to occur concurrent with remedial activities on the 3101 property due to the interrelated nature of planned activities, including excavation and treatment of soils from both sites along the common property line and nearby sewer work on the 3101 Site.

Following installation of the sheet piling, excavation of impacted soils commenced (August 1996). An estimated 2,340 cubic yards of soils were excavated, stockpiled within the 3101 Site building, characterized for chemical content, and, where indicated, treated on the 3101 Site via low temperature thermal desorption in accordance with Dames & Moore's December 13, 1995 *Design Report*. In general, soils were excavated to a depth of approximately 12.5 feet bgs. Figure 5 presents the actual depth of confirmatory soil sampling at each location along the excavation floor. This depth corresponds with the excavation depth. Confirmatory floor sampling of the excavation was conducted in accordance with the *Design Report* guidelines and included both VOC and total analysis for mercury, chromium, and lead. Excavation wall sampling was also conducted on the east and west ends of the excavations. However, it was not possible to collect wall samples along the southern portion of the excavation due to the presence of the steel sheet piling. The steel sheeting was installed to coincide with the southernmost row of soil borings (PG-8, PG-9, PG-10, PG-11, and PG-12) which did not indicate the presence of levels of contamination above residential soil remediation objectives based on laboratory testing of representative samples. The analytical data obtained from the soil borings represents confirmatory wall samples in this area and is presented in Table 4. Table 5 presents the results of confirmatory sampling from excavation activities; Figure 5 presents the highlights of this information graphically; Appendix F contains the excavation confirmatory sampling lab analytical reports. Some of the stockpiled soils found not to exceed Illinois EPA-approved residential soil remediation objectives, as well as soils that had been thermally treated to meet residential remediation objectives, were returned to the open excavations on the Peoples Gas property, consistent with the soil management methods prescribed in the *Design Report*.

Low temperature thermal desorption treatment activities at the 3101 Site voluntarily ceased on October 2, 1996 as a result of concerns expressed by the public and governmental authorities. At that time, approximately 92% (2,340 of 2,530 cubic yards) of the impacted soils on the Peoples Gas property had already been remediated via excavation. A portion of the excavated soils had already been thermally treated and returned to the Peoples Gas open excavations. However, soils which had been staged in the containment building awaiting thermal treatment were instead treated off site via RCRA incineration between December 1996 and February 1997. No additional impacted soils were excavated from the Peoples Gas Site following the October 2, 1996 shutdown. In late 1997, representatives of Peoples Gas and the parties remediating the 3101 Site agreed that no additional soils would be excavated and that additional soils to be used for backfilling the Peoples Gas Site excavation would be imported to the site from a quarry. Crushed aggregate meeting the Illinois Department of Transportation's material specifications for CA-6 or CA-7, commonly used in road construction as asphalt subbase, was brought to the site for use as backfill. This work was completed in October through December 1997. Site regrading, regravelling, fence restoration and other related tasks were also completed at that time.

At the request of the Illinois EPA, URS conducted groundwater modelling in accordance with the methodologies identified in the TACO regulations. The purpose of the modelling was to determine whether the residual soil contamination remaining in place after cessation of remediation activities, particularly that exceeding the Tier 1 soil component of groundwater ingestion, posed a potential risk of leaching to groundwater and either migrating outside of the focused investigation study area at concentrations exceeding applicable groundwater remediation objectives or discharging into a surface water body at concentrations exceeding water quality criteria. The results of groundwater modelling, by back-calculation, demonstrate that the residual soil contamination is several orders of magnitude lower than would be required to potentially impact surface water at applicable regulatory thresholds. The models were run assuming that the surface water body was located only 50 feet from the source. URS also conducted modelling to verify that groundwater impacts are not predicted to migrate more than one foot from the source location. The nearest surface water body is approximately 400 feet from the source, further adding to the conservative nature of the results. The results of groundwater modelling are included as Appendix G.

9.0 SPECIAL CONDITIONS

Following remedial activities and site restoration, certain portions of the focused area of site

investigation on the Peoples Gas Site remained underlain by soils with contamination above residential but below commercial/industrial soil remediation objectives. Soil samples obtained from the remainder of the focused area of site investigation met both the residential and commercial/industrial remediation criteria. Two separate focused NFR letters are sought for the limited area of site investigation. The first focused NFR letter will apply to those portions of the limited site investigation area where soils were found to meet residential remediation objectives. This NFR will not include any deed restrictions limiting future land use. Figure 6 presents a scaled Site Base Map identifying the unrestricted portions of the focused study area. The second focused NFR letter will apply to the two portions of the limited site investigation area where soils impacted with contaminants at concentrations above residential but below commercial/industrial remediation objectives is still present. This NFR will include a deed restriction limiting future land use to either commercial or industrial purposes. Figure 7 presents a scaled Site Base Map identifying the two future land use deed restricted portions of the focused study area. Legal descriptions for these two areas are as follows:

The legal description for the limited area of site investigation is as follows:

A part of Lot 2 in the subdivision of the West ½ of Lot 1 of the subdivision of the southwest 1/4 of Section 36, Township 41 North, Range 13 East of the third principal meridian, recorded March 27, 1872, in Book 1, Page 60, in the Recorder's Office of Cook County, Illinois, described as follows: commencing at the northwest corner of said Lot 2; thence north 88 degrees 15 minutes 51 seconds east along the north line of said Lot 2 and parallel with the north line of said southwest 1/4 of Section 36-41-13, a distance of 224.50 feet to the point of beginning of the tract herein described; thence continuing north 88 degrees 15 minutes 51 seconds east along said north line a distance of 409.00 feet to a point, thence south 1 degree 44 minutes 09 seconds east a distance of 15.50 feet to a point; thence south 88 degrees 15 minutes 51 seconds west a distance of 409.00 feet to a point, thence north 1 degree 44 minutes 09 seconds west a distance of 15.50 feet to the point of beginning, and containing 6,339.50 square feet, more or less.

The legal descriptions for the two small areas upon which the future industrial/commercial land use deed restriction will be imposed are as follows:

(More westerly parcel): A part of Lot 2 in the subdivision of the West ½ of Lot 1 of the subdivision of the southwest 1/4 of Section 36, Township 41 North, Range 13 East of the third principal

meridian, recorded March 27, 1872, in Book 1, Page 60 , in the Recorder's Office of Cook County, Illinois, described as follows: commencing at the northwest corner of said Lot 2; thence north 88 degrees 15 minutes 51 seconds east along the north line of said Lot 2 and parallel with the north line of said southwest 1/4 of Section 36-41-13, a distance of 539.50 feet to the point of beginning of the tract herein described; thence continuing north 88 degrees 15 minutes 51 seconds east along said north line a distance of 22.50 feet to a point; thence south 1 degree 44 minutes 09 seconds east a distance of 15.50 feet to a point; thence south 88 degrees 15 minutes 51 seconds west a distance of 22.50 feet to a point; thence north 1 degree 44 minutes 09 seconds west a distance of 15.50 feet to the point of beginning, and containing 348.75 square feet, more or less.

(More easterly parcel): A part of Lot 2 in the subdivision of the West ½ of Lot 1 of the subdivision of the southwest 1/4 of Section 36, Township 41 North, Range 13 East of the third principal meridian, recorded March 27, 1872, in Book 1, Page 60 , in the Recorder's Office of Cook County, Illinois, described as follows: commencing at the northwest corner of said Lot 2; thence north 88 degrees 15 minutes 51 seconds east along the north line of said Lot 2 and parallel with the north line of said southwest 1/4 of Section 36-41-13, a distance of 587.50 feet to the point of beginning of the tract herein described; thence continuing north 88 degrees 15 minutes 51 seconds east along said north line a distance of 46.00 feet to a point; thence south 1 degree 44 minutes 09 seconds east a distance of 10.50 feet to a point; thence south 88 degrees 15 minutes 51 seconds west a distance of 46.00 feet to a point; thence north 1 degree 44 minutes 09 seconds west a distance of 10.50 feet to the point of beginning, and containing 483.00 square feet, more or less.

10.0 RESULTS/ENDANGERMENT ASSESSMENT

As previously mentioned, an estimated 2,340 of 2,530 cubic yards of VOC-impacted soils were remediated from the 0.15-acre focused area of investigation on the Peoples Gas property via excavation to achieve proposed residential soil remediation objectives. The results of confirmatory soil sampling, coupled with the investigation data, validate this finding. Of the remaining areas which were not remediated, representative analytical data indicate that certain VOCs (primarily vinyl chloride) are present above proposed residential but below commercial/industrial soil remediation objectives. The VOCs which remain in the soil potentially pose only a soil ingestion risk. The measured soil concentrations in the remaining impacted soils are below corresponding soil inhalation remediation objectives, regardless of future land use. Data from the remaining impacted soils were compared against construction worker-based soil remediation objectives (Tier 1/Tier 2) and were

found to be below these objectives. The risk to humans, particularly children, of consumption of the impacted soils is extremely low because of the presence of security guards, heavy duty chain link fencing, and deed restrictions which limit the future land use to industrial or commercial purposes. In addition, these areas are relatively small, occupying less than 750 square feet. Because the more heavily impacted soils have been removed and due to the clayey nature of the on-site soils, it is anticipated that the remaining residual contamination will not migrate and will continue the process of natural attenuation to nonhazardous chemicals. In fact, the results of groundwater modelling strongly support this conclusion.

11.0 CONCLUSIONS

The investigation and remedial effort have been executed in conformance with the Site Remediation Program and TACO regulations found in 35 IAC Parts 740 and 742, respectively. Two focused No Further Remediation letters are requested for the limited site investigation area and for the contaminants studied (mercury, chromium, lead, and VOCs): one without a future land use deed restriction for the balance of the study area found to meet residential remediation criteria, and one that will include a future commercial/industrial land use restriction to apply to two small areas where residential remediation objectives were not met. Site Base Maps for each of the requested NFR letters are represented by Figures 6 and 7. The Professional Engineer's certification is included as Appendix H.

REFERENCES

- 1) *Site Investigation Report/Site Remediation Work Plan, CP Clare/General Instrument Corporation Site, 3101 West Pratt Avenue, Chicago, Illinois*, Dames & Moore, Inc., May 8, 1995
- 2) *Design Report, 0316020001 -- Cook County, 3101 West Pratt Avenue Site, Chicago, Illinois*, Dames & Moore, Inc., December 13, 1995
- 3) *Site Remediation Work Plan, 3101 West Pratt Avenue Site, Chicago, Illinois*, Dames & Moore, Inc., October 13, 1997

Table 1
Geotechnical Summary Table
Peoples Gas Site
Rogers Park Substation
Chicago, Illinois

Geotechnical Parameter/Boring ID	SB-3 8-10'	SB-27 27-28'	SB-47 2-4'	SB-47 4-6'	SB-47 8-10'	SB-48 4-6'	SB-48 6-8'	SB-49 2-4'	SB-49 4-6'	SB-49 6-8'	SB-49 8-10'	SB-50 2-4'	SB-50 6-8'	SB-50 8-10'	Avg. Value
Specific Gravity (gm/cc)	1.80	2.79	na	2.89	na	na	2.83	na	2.76	na	2.73	2.81	na	2.80	2.80
Moisture Content (%)	27.1	21.0	na	25.2	na	na	26.6	na	25.5	na	12.9	25.6	na	27.4	23.9
Dry Density (gm/cc)	1.55	1.76	na	1.67	na	na	1.63	na	1.63	na	1.89	1.67	na	1.59	1.675
Permeability (cm/sec)	2.72×10^{-8}	3.67×10^{-8}	na	na	na	na	na	na	na	na	9.01×10^{-8}	na	na	1.62×10^{-7}	7.9×10^{-8}
Fraction Organic Carbon	0.0171	0.02925	0.0145	na	0.0414	>0.06	na	0.0241	na	0.0387	na	na	>0.06	na	0.036543
Soil Classification	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay	silty clay

Note: The site-specific geotechnical values obtained from SB-27, 27-28' were not used in calculating average values for those TACO input parameters needed to derive a Tier 2 soil inhalation remediation objective. This was done deliberately because this sample depth was deemed inappropriate for inclusion in assessing risk to human health by the inhalation exposure pathway.

Table 2
TACO Input Variables
Peoples Gas Property
Rogers Park Substation
Chicago, Illinois

Symbol	Parameter	Unit	Source	Value Used
TR	Target Cancer Risk	unitless		1×10^6
AT _c	Averaging Time for Carcinogens	years	SSL	70
URF	Inhalation Unit Risk Factor	($\mu\text{g}/\text{m}^3$) ⁻¹	IEPA (IRIS/HEAST)	8.4 x 10 ⁻⁵ vinyl chloride 5.8 x 10 ⁻⁷ PCE 1.74 x 10 ⁻⁶ TCE
EF	Exposure Frequency	d/yr		350 residential 30 construction worker 250 industrial/commercial
ED	Exposure Duration	years		30 residential 1 construction worker 25 industrial/commercial
Q/C	Inverse of the mean concentration at the center of a square source	($\text{g}/\text{m}^2\text{-s})/(\text{kg}/\text{m}^3)$	Appendix C, Table H	68.81 residential 85.81 construction worker 85.81 industrial/commercial
T	Exposure Interval	s		9.5 x 10 ⁸ residential 3.6 x 10 ⁶ construction worker 7.9 x 10 ⁸ industrial/commercial
D _i	Diffusivity in Air	cm ² /s	Appendix C, Table E	0.106 vinyl chloride 0.072 PCE 0.079 TCE
w	Soil Moisture Content	%	site-specific, See Table 1	0.239
dry soil bulk density	Dry Soil Bulk Density	g/cm ³	site-specific, See Table 1	1.675
soil particle density	Soil Particle Density	g/cm ³	site-specific, See Table 1	2.8
H'	Henry's Law Constant	unitless	Appendix C, Table E	1.11 vinyl chloride 0.754 PCE 0.422 TCE

Table 2 con'd
TACO Input Variables
Peoples Gas Property
Rogers Park Substation
Chicago, Illinois

Symbol	Parameter	Unit	Source	Value Used
K_{oc}	Organic Carbon Partition Coefficient	cm ³ /g	Appendix C, Table E	18.6 vinyl chloride 155 PCE 166 TCE
f_{oc}	Fraction Organic Carbon	g/g	site-specific, See Table 1	0.036543
S	Solubility in Water	mg/L	Appendix C, Table E	1760 vinyl chloride 200 PCE 1100 TCE
D_w	Diffusivity in Water	cm ² /s	Appendix C, Table E	1.23×10^{-6} vinyl chloride 8.2×10^{-6} PCE 9.1×10^{-6} TCE
I	Infiltration Rate	m/yr	SSL	0.3
K_s	Saturated Hydraulic Conductivity	m/yr	Appendix C, Table K	5
$1/(2b+3)$	Exponential in Equation S20	unitless	Appendix C, Table K	0.039

Table 3
Summary of Potentially Applicable Soil Remediation Objectives
Peoples Gas - Rogers Park Substation Site
Chicago, Illinois

Contaminants/Values in ppm	Residential Soil Objectives				Construction Worker Soil Objectives			Industrial/Commercial Soil Objectives			
	Tier 1 Soil Ingestion	Tier 1 Soil Inhalation	Tier 2 Soil Inhalation	Applicable Value	Tier 1 Soil Ingestion	Tier 1 Soil Inhalation	Tier 2 Soil Inhalation	Tier 1 Soil Ingestion	Tier 1 Soil Inhalation	Tier 2 Soil Inhalation	Applicable Value
Tetrachloroethene	12	11	213	12	2,400	28	498 ¹	110	20	407	110
Trichloroethene	58	5	90	58	1,200	12	243	520	8.9	173	173
Vinyl Chloride	0.3	0.03	0.48	0.3	65	0.08	1.28	3	0.06	0.89	0.89

¹ Value presented represents the site-specific soil saturation limit for this compound since the Tier 2 site-specific soil inhalation value is higher than the saturation limit.

Table 4
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial /Industrial Soil Cleanup Objective	PG 1 8-10'	PG 1 18-20'	PG 2 3.5-4.5'	PG 2 10-12'	PG 2 14-16'	PG 3 10-12'	PG 3 14-16'	PG 3 23-25'	PG 4 14-16'	PG 5 10-12'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)												
Acetone	7,800	100,000	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Benzene	0.8	1.5	bdl	bdl	0.123	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromodichloromethane	10	92	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromoform	53	100	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromomethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Butanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Carbon Disulfide	720	9	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Carbon Tetrachloride	0.3	0.640	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorobenzene	130	1.3	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorodibromomethane	1,300	1,300	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroform	0.3	0.540	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloromethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethane	1,300	130	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,2-Dichloroethane	0.4	0.7	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethene	700	1,500	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,2-Dichloroethene	780	1,200	1.050	bdl	bdl	0.0126	bdl	1.510	1.280	bdl	bdl	1.060
1,2-Dichloropropane	9	0.5	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
trans-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Ethylbenzene	400	58	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Hexanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
4-Methyl-2-Pentanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Methylene Chloride	13	24	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Styrene	1,500	430	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1,2,2-Tetrachloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Tetrachloroethene	12 ¹	110 ¹	bdl	bdl	bdl	bdl	bdl	0.2	bdl	bdl	bdl	bdl
Toluene	650	42	bdl	bdl	2.44	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1,1-Trichloroethane	1,200	1,200	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial /Industrial Soil Cleanup Objective	PG 1 8-10'	PG 1 18-20'	PG 2 3.5-4.5'	PG 2 10-12'	PG 2 14-16'	PG 3 10-12'	PG 3 14-16'	PG 3 23-25'	PG 4 14-16'	PG 5 10-12'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)												
1,1,2-Trichloroethane	310	1,800	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Trichloroethene	58 ¹	173 ¹	bdl	bdl	bdl	bdl	bdl	55.4	39.1	bdl	bdl	bdl
Vinyl Acetate	1000	10	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Vinyl Chloride	0.3 ¹	0.89 ¹	1.07	bdl	49.5	0.694	bdl	bdl	bdl	bdl	bdl	0.297
Xylenes	410	410	bdl	bdl	0.221	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Total Metal Concentrations in mg/kg (ppm) USEPA Methods 6010A and 7470												
Chromium	270	420	21.2	17.5	22.2	18.9	20.6	22.1	21.6	22.2	19.4	18.6
Lead	400	400	15.5	15.2	15.3	15.8	14.0	15.2	15.7	14.2	14.0	14.7
Mercury	10	61	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl

Site-specific Tier 2 value presented.

\\ARTRIP-1\CPCLARE\PEOPLES\PGINVRE TBL

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial/Industrial Soil Cleanup Objective	PG 5 18-20'	PG 6 9-11'	PG 6 13-15'	PG 7 7-9'	PG 7 13-15'	PG 8 11-13'	PG 8 18-20'	PG 9 11-13'	PG 9 23-25'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)											
1,1,2-Trichloroethane	310	1,800	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Trichloroethene	58 ¹	173 ¹	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Vinyl Acetate	1000	10	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Vinyl Chloride	0.3 ¹	0.89 ¹	bdl	bdl	0.0755	bdl	bdl	bdl	bdl	bdl	bdl
Xylenes	410	410	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Total Metal Concentrations in mg/kg (ppm) USEPA Methods 6010A and 7470											
Chromium	270	420	15.4	20.7	19.9	18.5	18.6	19.1	17.6	18.6	9.6
Lead	400	400	14.3	15.3	13.4	14.7	13.6	14.4	12.9	13.7	7.7
Mercury	10	61	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial/ Industrial Soil Cleanup Objective	PG 10 1-3'	PG 10 3-5'	PG 10 9-11'	PG 11 1-3'	PG 11 3-5'	PG 11 7-9'	PG 11 9-11'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)									
Acetone	7,800	100,000	bdl	bdl	bdl	0.1	bdl	bdl	bdl
Benzene	0.8	1.5	bdl	bdl	bdl	bdl	0.0068	bdl	0.0052
Bromodichloromethane	10	92	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromoform	53	100	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromomethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Butanone	--	--	bdl	bdl	bdl	0.0174	bdl	bdl	bdl
Carbon Disulfide	720	9	bdl	bdl	bdl	0.0058	0.0053	0.0051	bdl
Carbon Tetrachloride	0.3	0.640	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorobenzene	130	1.3	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorodibromomethane	1,300	1,300	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroform	0.3	0.540	bdl	0.0175	bdl	bdl	bdl	bdl	bdl
Chloromethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethane	1,300	130	0.0482	0.0241	bdl	bdl	bdl	bdl	bdl
1,2-Dichloroethane	0.4	0.7	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethene	700	1,500	bdl	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,2-Dichloroethene	780	1,200	bdl	bdl	0.0204	0.0186	0.232	bdl	0.0325
trans-1,2-Dichloroethene	1,600	3,100	bdl	bdl	bdl	bdl	0.0302	bdl	0.0086
1,2-Dichloropropane	9	0.5	bdl	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl
trans-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Ethylbenzene	400	58	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Hexanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl
4-Methyl-2-Pentanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Methylene Chloride	13	24	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Styrene	1,500	430	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1,2,2-Tetrachloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Tetrachloroethene	12 ¹	110 ¹	bdl	0.0288	bdl	bdl	bdl	bdl	bdl
Toluene	650	42	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1,1-Trichloroethane	1,200	1,200	0.0312	0.0133	bdl	bdl	bdl	bdl	bdl

Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial/ Industrial Soil Cleanup Objective	PG 10 1-3'	PG 10 3-5'	PG 10 9-11'	PG 11 1-3'	PG 11 3-5'	PG 11 7-9'	PG 11 9-11'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)									
1,1,2-Trichloroethane	310	1,800	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Trichloroethene	58 ¹	173 ¹	bdl	0.0116	bdl	0.0084	bdl	bdl	0.0075
Vinyl Acetate	1000	10	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Vinyl Chloride	0.3 ¹	0.89 ¹	bdl	bdl	bdl	bdl	0.141	0.0180	0.0593
Xylenes	410	410	bdl	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial /Industrial Soil Cleanup Objective	PG 12 9-11'	PG 12 11-13'	PG 13 3-5'	PG 13 9-11'	PG 13 11-13'	PG 13 13-15'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)								
Acetone	7,800	100,000	bdl	bdl	bdl	bdl	bdl	bdl
Benzene	0.8	1.5	bdl	bdl	bdl	bdl	bdl	bdl
Bromodichloromethane	10	92	bdl	bdl	bdl	bdl	bdl	bdl
Bromoform	53	100	bdl	bdl	bdl	bdl	bdl	bdl
Bromomethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl
2-Butanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl
Carbon Disulfide	720	9	0.0099	bdl	bdl	bdl	bdl	bdl
Carbon Tetrachloride	0.3	0.640	bdl	bdl	bdl	bdl	bdl	bdl
Chlorobenzene	130	1.3	bdl	bdl	bdl	bdl	bdl	bdl
Chlorodibromomethane	1,300	1,300	bdl	bdl	bdl	bdl	bdl	bdl
Chloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl
Chloroform	0.3	0.540	bdl	bdl	bdl	bdl	bdl	bdl
Chloromethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethane	1,300	130	bdl	bdl	bdl	bdl	bdl	bdl
1,2-Dichloroethane	0.4	0.7	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethene	700	1,500	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,2-Dichloroethene	780	1,200	0.0257	0.0294	4.23	1.65	bdl	bdl
trans-1,2-Dichloroethene	1,600	3,100	bdl	bdl	0.355	0.108	bdl	bdl
1,2-Dichloropropane	9	0.5	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl
trans-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl
Ethylbenzene	400	58	bdl	bdl	bdl	bdl	bdl	bdl
2-Hexanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl
4-Methyl-2-Pentanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl
Methylene Chloride	13	24	bdl	bdl	bdl	bdl	bdl	bdl
Styrene	1,500	430	bdl	bdl	bdl	bdl	bdl	bdl
1,1,2,2-Tetrachloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl
Tetrachloroethene	12 ¹	110 ¹	bdl	bdl	24.6	41.4	bdl	0.0476
Toluene	650	42	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial /Industrial Soil Cleanup Objective	PG 12 9-11'	PG 12 11-13'	PG 13 3-5'	PG 13 9-11'	PG 13 11-13'	PG 13 13-15'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)								
1,1,1-Trichloroethane	1,200	1,200	bdl	bdl	bdl	bdl	bdl	bdl
1,1,2-Trichloroethane	310	1,800	bdl	bdl	bdl	bdl	bdl	bdl
Trichloroethene	58 ¹	173 ¹	3.82	0.281	3.96	7.38	bdl	0.008
Vinyl Acetate	1,000	10	bdl	bdl	bdl	bdl	bdl	bdl
Vinyl Chloride	0.3 ¹	0.89 ¹	bdl	bdl	bdl	bdl	bdl	bdl
Xylenes	410	410	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial/ Industrial Soil Cleanup Objective	PG 14 3'-5'	PG 14 5'-7'	PG 15 3'-5'	PG 15 5'-7'	PG 15 7'-9'	PG 16 1'-3'	PG 16 3'-5'	PG 17 2'-4'	PG 17 16'-18'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)											
Acetone	7,800	100,000	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Benzene	0.8	1.5	0.0056	bdl	bdl	0.0052	bdl	0.0182	bdl	bdl	bdl
Bromodichloromethane	10	92	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromoform	53	100	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromomethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Butanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Carbon Disulfide	720	9	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Carbon Tetrachloride	0.3	0.640	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorobenzene	130	1.3	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorodibromomethane	1,300	1,300	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroform	0.3	0.540	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloromethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethane	1,300	130	bdl	bdl	bdl	bdl	bdl	bdl	bdl	0.0184	bdl
1,2-Dichloroethane	0.4	0.7	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethene	700	1,500	bdl	bdl	bdl	0.0149	bdl	bdl	0.0525	bdl	bdl
cis-1,2-Dichloroethene	780	1,200	0.101	0.567	1.42	5.74	0.0516	0.0688	22.60	0.128	0.0167
trans-1,2-Dichloroethene	1,600	3,100	0.0062	0.102	0.314	0.17	bdl	0.0246	1.81	0.0208	bdl
1,2-Dichloropropane	9	0.5	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
trans-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Ethylbenzene	400	58	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Hexanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
4-Methyl-2-Pentanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Methylene Chloride	13	24	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Styrene	1,500	430	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1,2,2-Tetrachloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Tetrachloroethene	12 ¹	110 ¹	0.0088	0.019	2.12	28.2	0.0083	0.15	2.81	bdl	bdl
Toluene	650	42	bdl	bdl	bdl	bdl	bdl	0.0083	bdl	bdl	bdl
1,1,1-Trichloroethane	1,200	1,200	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial/ Industrial Soil Cleanup Objective	PG 14 3'-5'	PG 14 5'-7'	PG 15 3'-5'	PG 15 5'-7'	PG 15 7'-9'	PG 16 1'-3'	PG 16 3'-5'	PG 17 2'-4'	PG 17 16'-18'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)											
1,1,2-Trichloroethane	310	1,800	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Trichloroethene	58 ¹	173 ¹	0.0184	0.0242	1.26	9.51	0.112	0.14	2.41	0.0611	9.750
Vinyl Acetate	1000	10	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Vinyl Chloride	0.3 ¹	0.89 ¹	bdl	bdl	bdl	bdl	bdl	bdl	0.713	bdl	bdl
Xylenes	410	410	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial/ Industrial Soil Cleanup Objective	PG 18 3'-5'	PG 18 17'-19'	PG 19 3'-5'	PG 19 19'-21'	PG 20 3'-5'	PG 20 17'-19'	PG 21 3'-5'	PG 21 15'-17'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)										
Acetone	7,800	100,000	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Benzene	0.8	1.5	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromodichloromethane	10	92	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromoform	53	100	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Bromomethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Butanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Carbon Disulfide	720	9	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Carbon Tetrachloride	0.3	0.640	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorobenzene	130	1.3	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chlorodibromomethane	1,300	1,300	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloroform	0.3	0.540	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Chloromethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethane	1,300	130	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,2-Dichloroethane	0.4	0.7	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1-Dichloroethene	700	1,500	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,2-Dichloroethene	780	1,200	0.0557	1.150	0.121	0.0243	0.0661	bdl	bdl	bdl
trans-1,2-Dichloroethene	1,600	3,100	0.0094	bdl	0.0219	bdl	0.0113	bdl	bdl	bdl
1,2-Dichloropropane	9	0.5	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
cis-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
trans-1,3-Dichloropropene	0.1	0.23	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Ethylbenzene	400	58	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
2-Hexanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
4-Methyl-2-Pentanone	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Methylene Chloride	13	24	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Styrene	1,500	430	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1,2,2-Tetrachloroethane	--	--	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Tetrachloroethene	12 ¹	110 ¹	bdl	bdl	bdl	bdl	0.0295	bdl	bdl	bdl
Toluene	650	42	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1,1,1-Trichloroethane	1,200	1,200	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented

Table 4 (con'd)
Phase II Soil Analytical Results
Peoples Gas Property
Chicago, Illinois

Sample Location/Depth	Residential Soil Cleanup Objective	Commercial/ Industrial Soil Cleanup Objective	PG 18 3'-5'	PG 18 17'-19'	PG 19 3'-5'	PG 19 19'-21'	PG 20 3'-5'	PG 20 17'-19'	PG 21 3'-5'	PG 21 15'-17'
Target Compound List - Volatile Organic Compounds in mg/kg (ppm) (USEPA Method 8240)										
1,1,2-Trichloroethane	310	1,800	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Trichloroethene	58 ¹	173 ¹	0.0396	11.60	0.0213	bdl	0.0461	bdl	bdl	bdl
Vinyl Acetate	1000	10	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Vinyl Chloride	0.3 ¹	0.89 ¹	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Xylenes	410	410	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl

¹ Site-specific Tier 2 value presented.

TABLE 5
SUMMARY OF ANALYTICAL RESULTS
CONFIRMATORY SOIL SAMPLES
PEOPLES GAS PROPERTY

PARAMETER	RESIDENTIAL CLEANUP OBJECTIVE	COMMERCIAL/ INDUSTRIAL CLEANUP OBJECTIVE	E019 (12.5')	E020 (12')	E021 (12')	E022 (12')	E023 (12.5')	E024 (15')	E027 (8')
TARGET COMPOUND LIST - VOLATILE ORGANIC COMPOUNDS (ppm)									
Acetone	7,800	100,000	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene	0.8	1.5	BDL	BDL	0.001	0.005	BDL	0.006	BDL
Bromodichloromethane	10	92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	130	1.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chloroform	0.3	0.540	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1-Dichloroethene	700	1,500	BDL	BDL	BDL	BDL	BDL	BDL	0.005
1,2-Dichloroethene (total)	780	1,200	0.027	0.05	1.923	0.194	BDL	0.02	0.774
Ethylbenzene	400	58	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Methylene Chloride	13	24	BDL	BDL	BDL	BDL	BDL	BDL	0.022
Tetrachloroethene	12*	110*	BDL	BDL	BDL	0.001	BDL	BDL	0.001
Toluene	650	42	0.019	BDL	BDL	BDL	BDL	BDL	BDL
1,1,1-Trichloroethane	1,200	1,200	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1,2-Trichloroethane	310	1,800	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Trichloroethene	58*	173*	0.096	0.624	0.378	0.25	BDL	BDL	0.408
Vinyl Acetate	1,000	10	BDL	BDL	0.014	BDL	BDL	BDL	BDL
Vinyl chloride	0.300*	0.89*	0.013	BDL	BDL	BDL	BDL	0.006	0.446
Xylenes (total)	410	410	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Other VOCs	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTAL METALS (ppm)									
Chromium	270	420	16.7	18.6	15.9	19.7	13.3	14.4	15.6
Lead	400	400	18.6	11.3	10.8	7.57	9.03	9.52	9.94
Mercury	10	61	BDL	BDL	BDL	BDL	BDL	0.0334	BDL

* Tier 2 soil remediation objective calculated using site-specific geotechnical data and Tier 2 procedures presented in the 35 IAC Part 742 regulations (June 1997).

TABLE 5 con'd
SUMMARY OF ANALYTICAL RESULTS
CONFIRMATORY SOIL SAMPLES
PEOPLES GAS PROPERTY

PARAMETER	RESIDENTIAL CLEANUP OBJECTIVE	COMMERCIAL/ INDUSTRIAL CLEANUP OBJECTIVE	E027A (5.5')	E028 (15')	E029 (12')	E030 (12')	E031 (12')	E032 (12')	E033 (10.5)	E034 (12')	E037 (12.5')
TARGET COMPOUND LIST - VOLATILE ORGANIC COMPOUNDS (ppm)											
Acetone	7,800	100,000	BDL	0.028	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene	0.8	1.5	BDL	0.003	0.003	BDL	0.001	0.001	BDL	BDL	BDL
Bromodichloromethane	10	92	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	130	1.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chloroform	0.3	0.540	0.001	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1-Dichloroethene	700	1,500	0.018	BDL	BDL	BDL	BDL	BDL	0.004	BDL	BDL
1,2-Dichloroethene (total)	780	1,200	3.98	0.004	0.001	0.008	0.001	BDL	0.343	0.046	BDL
Ethylbenzene	400	58	BDL	0.007	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Methylene Chloride	13	24	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Tetrachloroethene	12*	110*	0.206	0.008	BDL	0.001	BDL	0.001	BDL	BDL	BDL
Toluene	650	42	BDL	0.004	0.001	0.001	BDL	0.001	BDL	BDL	BDL
1,1,1-Trichloroethane	1,200	1,200	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1,2-Trichloroethane	310	1,800	0.008	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Trichloroethene	58*	173*	5.96	BDL	BDL	BDL	BDL	BDL	7.56	BDL	BDL
Vinyl Acetate	1,000	10	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Vinyl chloride	0.300*	0.89*	0.580	0.004	BDL	0.011	BDL	BDL	BDL	0.016	BDL
Xylenes (total)	410	410	BDL	0.019	BDL	BDL	BDL	BDL	0.003	BDL	BDL
Other VOCs	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTAL METALS (ppm)											
Chromium	270	420	15.0	14.9	14.1	16.4	15.2	14.0	17.6	17.1	16.5
Lead	400	400	9.52	8.26	10.9	10.0	8.16	9.28	5.98	8.40	7.05
Mercury	10	61	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

* The site-specific cleanup objective calculated using geotechnical data from the site and Tier 2 procedures presented in the 35 IAC Part 742 regulations (June 1997).

TABLE 5 con'd
SUMMARY OF ANALYTICAL RESULTS
CONFIRMATORY SOIL SAMPLES
PEOPLES GAS PROPERTY

PARAMETER	RESIDENTIAL CLEANUP OBJECTIVE	COMMERCIAL/ INDUSTRIAL CLEANUP OBJECTIVE	E038 (12')	E039 (12')	E040 (12')	E041 (11')	E042 (11.5')	E043 (11.5')	E045 (11.5')	E046 (12')	E047 (12')
TARGET COMPOUND LIST - VOLATILE ORGANIC COMPOUNDS (ppm)											
Acetone	7,800	100,000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Benzene	0.8	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bromodichloromethane	10	92	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	130	1.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chloroform	0.3	0.540	BDL	0.003	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1-Dichloroethene	700	1,500	BDL	BDL	BDL	BDL	0.008	BDL	BDL	BDL	BDL
1,2-Dichloroethene (total)	780	1,200	BDL	BDL	BDL	0.001	BDL	BDL	0.017	BDL	0.003
Ethylbenzene	400	58	BDL	BDL	BDL	BDL	0.002	BDL	BDL	BDL	BDL
Methylene Chloride	13	24	BDL	BDL	BDL	0.046	0.060	BDL	BDL	BDL	BDL
Tetrachloroethene	12*	110*	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Toluene	650	42	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1,1-Trichloroethane	1,200	BDL	BDL	BDL	BDL	0.001	0.036	BDL	BDL	BDL	BDL
1,1,2-Trichloroethane	310	1,800	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Trichloroethene	58*	364*	BDL	BDL	BDL	BDL	BDL	BDL	0.012	BDL	BDL
Vinyl Acetate	1,000	10	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Vinyl chloride	0.300*	1.78*	BDL	BDL	BDL	BDL	BDL	BDL	0.020	BDL	0.005
Xylenes (total)	410	410	BDL	BDL	BDL	BDL	0.006	BDL	BDL	BDL	BDL
Other VOCs	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTAL METALS (ppm)											
Chromium	270	420	10.9	13.0	13.2	16.2	17.8	18.6	16.9	18.0	16.2
Lead	400	400	7.49	10.6	8.96	11.1	12.1	9.90	10.8	7.76	5.49
Mercury	10	61	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

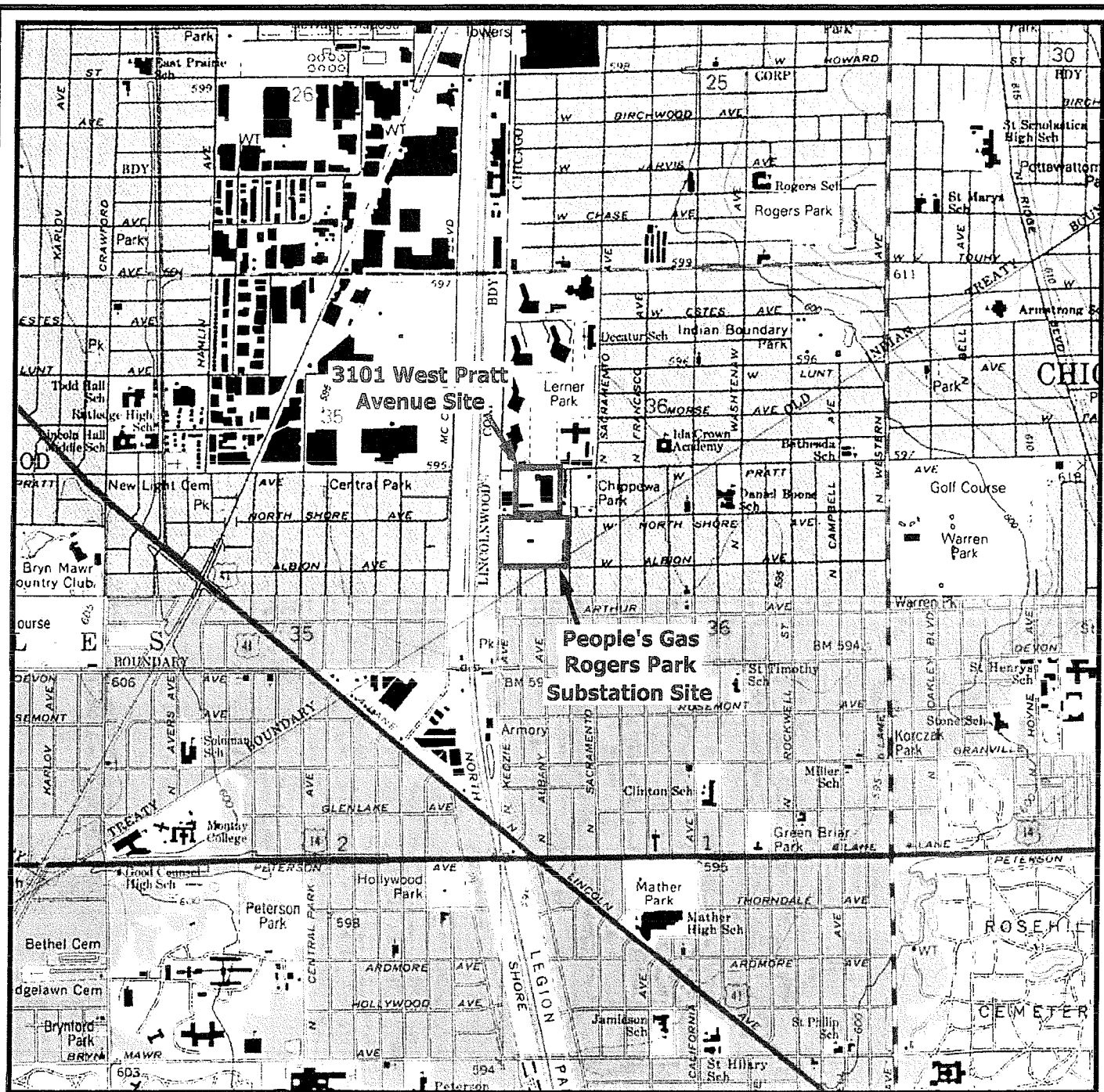
* The site-specific cleanup objective calculated using geotechnical data from the site and Tier 2 procedures presented in the 35 IAC Part 742 regulations (June 1997).

Table 6
Construction Worker Soil Remediation Objectives
Peoples Gas Site
Rogers Park Substation
Chicago, Illinois

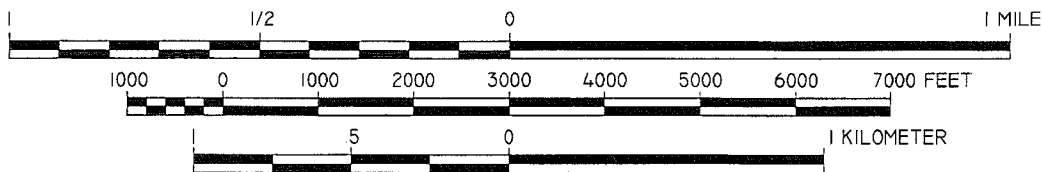
Parameter	Proposed Soil Remediation Objective in ppm
Acetone	100,000
Benzene	2.1
Bromodichloromethane	2,000
Bromoform	140
Bromomethane	--
2-Butanone	--
Carbon disulfide	9.0
Carbon tetrachloride	0.90
Chlorobenzene	1.3
Chloroethane	--
Chloroform	0.76
Chloromethane	--
1,1-Dichloroethane	130
1,2-Dichloroethane	0.99
1,1-Dichloroethene	1,500
cis-1,2-Dichloroethene	1,200
trans-1,2-Dichloroethene	3,100
1,2-Dichloropropane	0.50
cis-1,3-Dichloropropene	0.33
trans-1,3-Dichloropropene	0.33
Ethylbenzene	58
2-Hexanone	--
4-Methyl-2-pentanone	--
Methylene chloride	34
Styrene	430
1,1,2,2-Tetrachloroethane	--
Tetrachloroethene	498 ¹
Toluene	42
1,1,1-Trichloroethane	1,200
1,1,2-Trichloroethane	1,800
Trichloroethene	243 ¹
Vinyl acetate	10
Vinyl chloride	1.28 ¹
Xylenes (total)	410

Note: Soil remediation objectives presented above represent the more stringent of the soil inhalation or soil ingestion remediation objectives for the construction worker scenario.

¹ Site-specific Tier 2 soil inhalation remediation objective.



SCALE: 1:24 000



NORTH

MAP REFERENCE:

PORTION OF U.S.G.S. QUADRANGLE MAP
7 1/2 MINUTE SERIES (TOPOGRAPHIC)
EVANSTON, ILLINOIS 1993 and
CHICAGO LOOP, ILLINOIS 1993



QUADRANGLE LOCATION

**PEOPLE'S GAS -
ROGERS PARK SUBSTATION FACILITY**
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 1 SITE LOCATION MAP

DATE: OCTOBER 6, 1999

JOB NO: 30413-002-007

DRAWN BY: MAR

CHK'D BY: GA

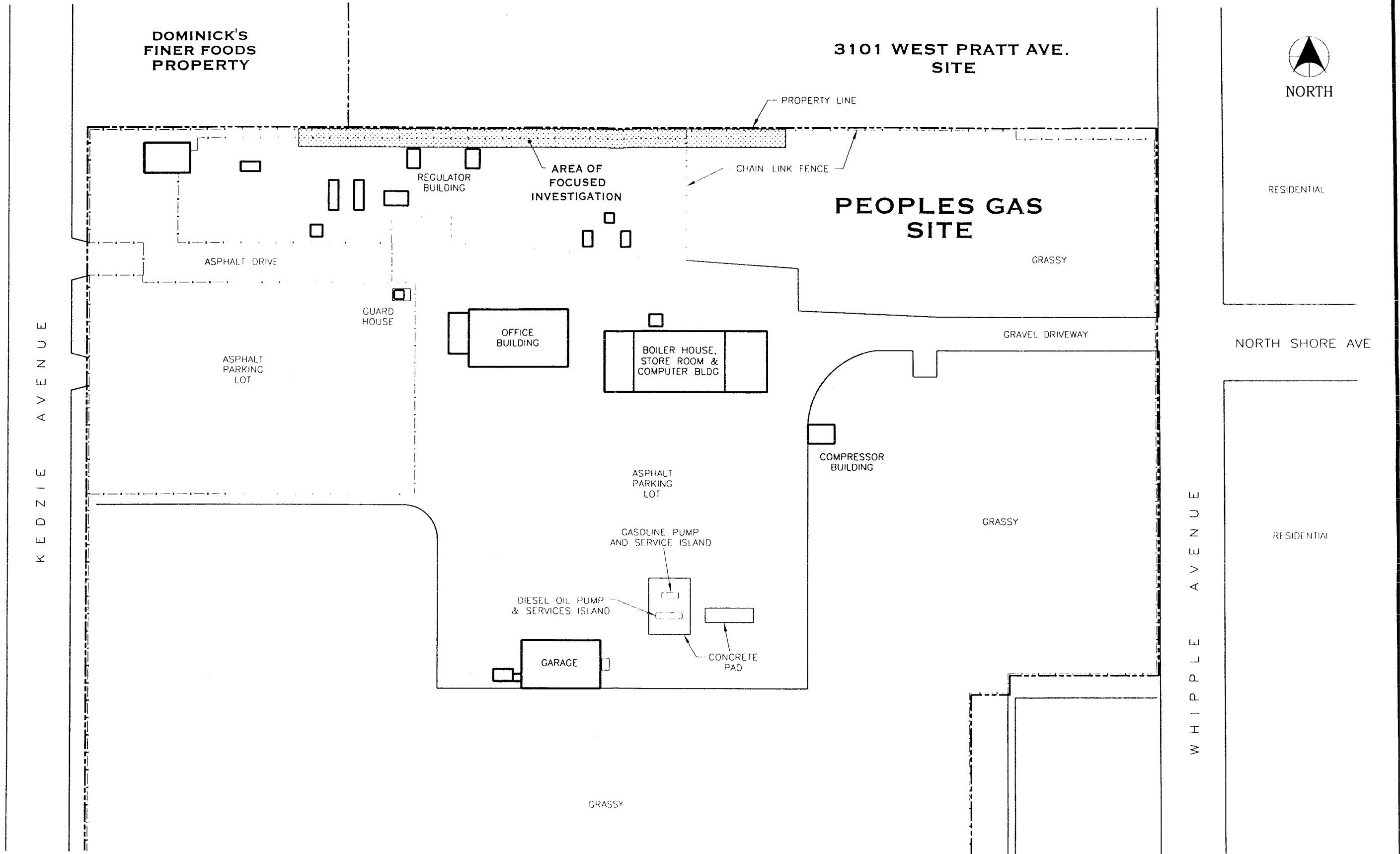
SCALE: AS SHOWN



DAMES & MOORE

A DAMES & MOORE GROUP COMPANY

1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008
PHONE: 847.228.0707
FAX: 847.228.1115



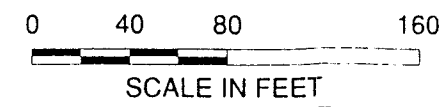
NORTH

RESIDENTIAL

NORTH SHORE AVE.

RESIDENTIAL

LEGEND:
- - - - - = PROPERTY LINE
* * * * * = CHAIN-LINK FENCE



PEOPLES GAS ROGERS PARK SUBSTATION 6659 NORTH KEDZIE AVENUE CHICAGO, ILLINOIS	
FIGURE 2 SITE LAYOUT	
DWG NO.: 30413-008.PEOPLE-4	DAMES & MOORE



PRATT AVENUE
BUILDING

ASPHALT PAVED
PARKING AREA

DOMINICK'S
FINER FOODS

FORMER BUTLER BUILDING

20' UTILITY EASEMENT

EXISTING 42" SEWER







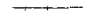

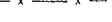

POWER POLE

OVERHEAD ELECTRIC
LINES

PEOPLES GAS
UNDERGROUND PIPING

PEOPLES GAS
SITE

LEGEND:

-  = FOCUSED AREA OF INVESTIGATION
-  = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)
-  = BORING LOCATION
-  = CATCH BASIN
-  = FIRE HYDRANT
-  = MANHOLE
-  = STORM SEWER LINES
-  = PROPERTY LINE
-  = CHAIN-LINK FENCE
-  = GUARD RAIL FENCE

	RESIDENTIAL SOIL CLEANUP OBJECTIVES IN ppm	INDUSTRIAL/COMMERCIAL SOIL CLEANUP OBJECTIVES IN ppm
PCE	12	110
TCE	58	364
1,2-DCE	780	1200
VC	0.3	1.78

0 30 60
SCALE IN FEET

PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

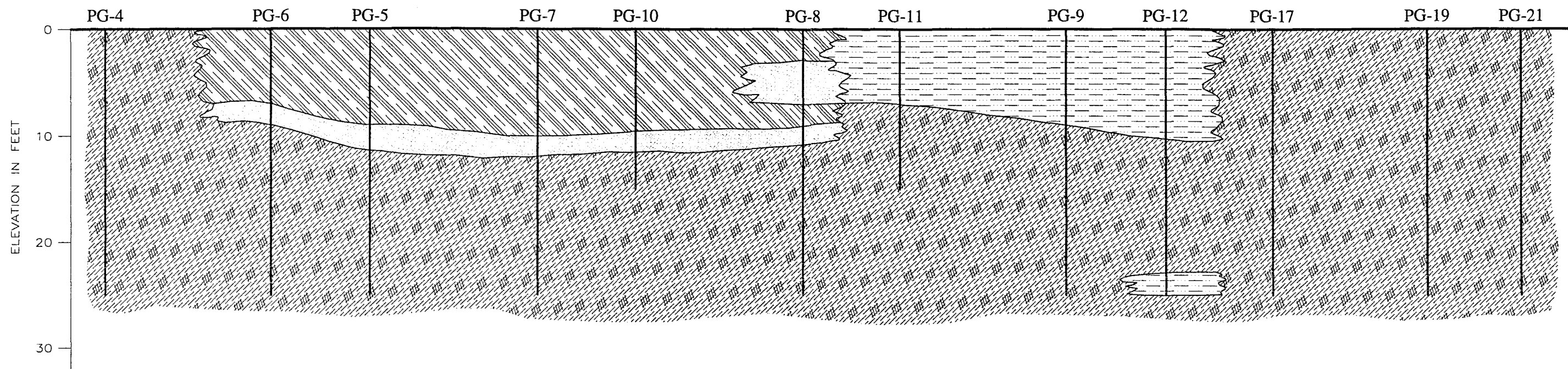
FIGURE 3
PEOPLES GAS PROPERTY
BORING LOCATIONS



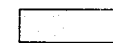
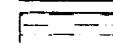

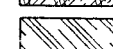
WEST



EAST

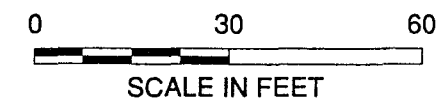


LEGEND:

-  = SAND FILL
-  = NATIVE SILT
-  = NATIVE CLAY
-  = CLAY FILL

NOTE:

BORING LOGS FOR PG-5 AND PG-10 DID NOT INDICATE THE PRESENCE OF SAND FILLS. SAND UNIT IN THESE TWO BORINGS HAS BEEN INCLUDED ONLY TO SIMPLIFY THE CROSS-SECTION. SANDFILL IS ASSOCIATED WITH BURIED PIPING.



PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 4
GEOLOGIC CROSS-SECTION



DOMINICK'S
FINER FOODS

3101 WEST PRATT AVE.
SITE

ASPHALT PAVED
PARKING AREA

FORMER BUTLER BUILDING

20' UTILITY EASEMENT

E027-8'
VC 0.446

E027A-5.5'
PCE BCO
TCE BCO
1,2-DCE BCO
VC 0.580

PC18
3'-5' 17'-19'
VOCs BCO BCO

PC13
3'-5' 9'-11' 11'-13'
PCE 24.6 41.4 BDL
TCE BCO BCO BDL
1,2-DCE BCO BCO BDL
VC BDL BDL BDL

PC15
3'-5' 5'-7' 7'-9'
PCE BCO 28.2 BCO
TCE BCO BCO BCO
1,2-DCE BCO BCO BCO
VC BDL BDL BDL

EXISTING 42" SEWER

POWER POLE

OVERHEAD ELECTRIC LINES

PEOPLES GAS
UNDERGROUND PIPING

PEOPLES GAS
SITE

LEGEND:



= COMMERCIAL/INDUSTRIAL DEED RESTRICTION AREAS

= FOCUSED AREA OF INVESTIGATION

= LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)

PC1 = BORING LOCATION

E027-8' ▲ = CONFIRMATORY FLOOR SAMPLE LOCATION WITH
COLLECTION DEPTH IN FEET bgs

BDL = BELOW DETECTION LIMIT

BCO = BELOW (RESIDENTIAL) CLEANUP OBJECTIVE

○ = CATCH BASIN

○ = FIRE HYDRANT

● = MANHOLE

— = STORM SEWER LINE

- - - = PROPERTY LINE

- x - x - = CHAIN-LINK FENCE

	RESIDENTIAL SOIL CLEANUP OBJECTIVES IN ppm	INDUSTRIAL/COMMERCIAL SOIL CLEANUP OBJECTIVES IN ppm
PCE	12	110
TCE	58	364
1,2-DCE	780	1200
VC	0.3	1.78

NOTE:

ALL CONFIRMATORY SAMPLE DATA WERE
BELOW RESIDENTIAL SOIL CLEANUP
OBJECTIVES EXCEPT WHERE NOTED.

0 30 60
SCALE IN FEET

PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 5
CONFIRMATORY SAMPLE LOCATIONS



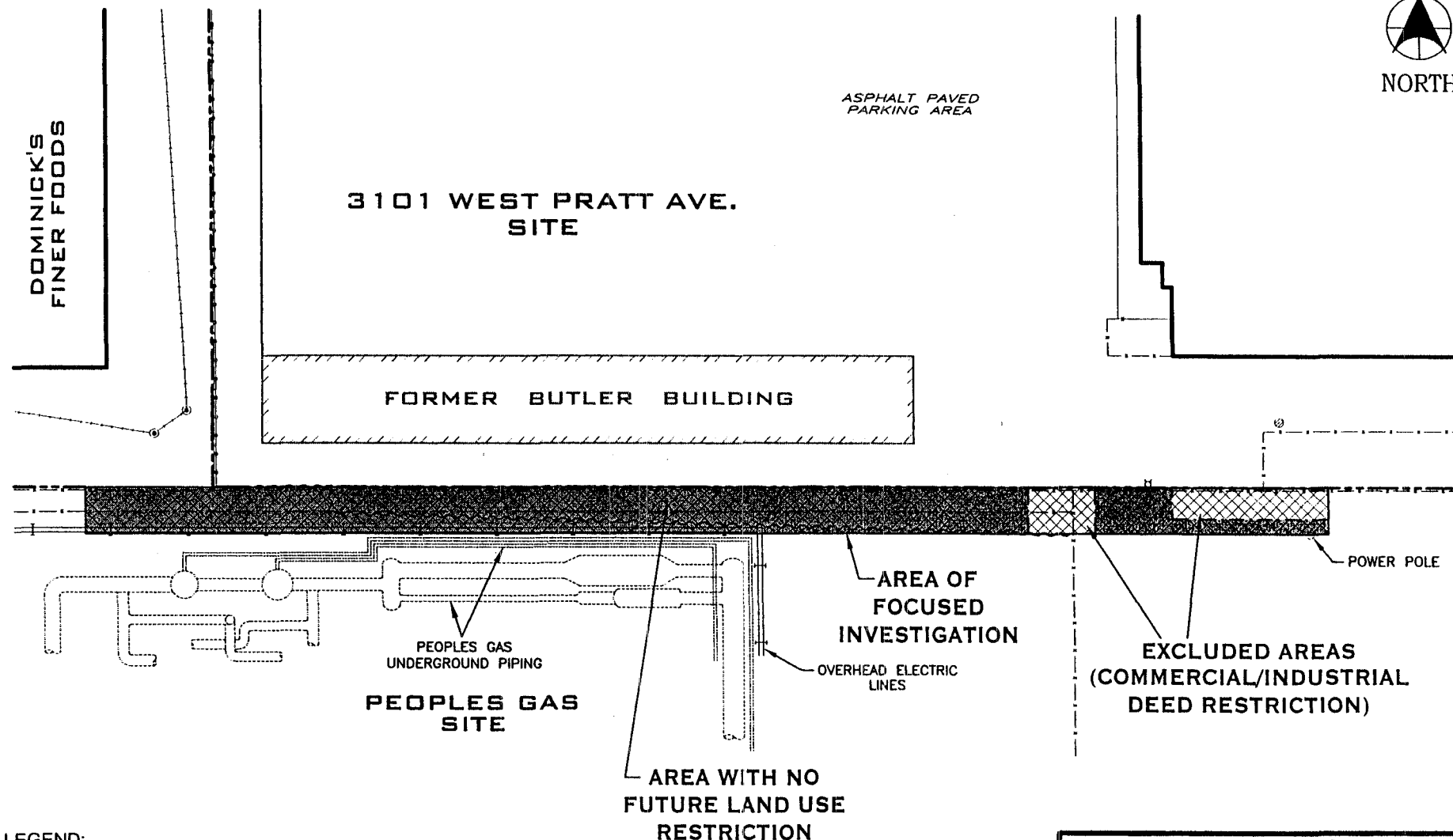
NORTH

ASPHALT PAVED
PARKING AREA





3101 WEST PRATT AVE.
SITE

DOMINICK'S
FINER FOODS

FORMER BUTLER BUILDING



LEGEND:

-  = NO FUTURE LAND USE RESTRICTION
-  = COMMERCIAL/INDUSTRIAL DEED RESTRICTION AREAS
-  = FOCUSED AREA OF INVESTIGATION
-  = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)

0 25 50 100

SCALE IN FEET

PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 6
FOCUSED AREA OF INVESTIGATION
INCLUDING AREAS WITH
NO FUTURE LAND USE
RESTRICTIONS/SITE BASE MAP

DWG NO.: 30413-002.PEOPLE-7

DAMES & MOORE



NORTH

ASPHALT PAVED
PARKING AREA

3101 WEST PRATT AVE.
SITE

DOMINICK'S
FINER FOODS

FORMER BUTLER BUILDING

POWER POLE

AREA OF
FOCUSED
INVESTIGATION

AREAS REQUIRING
COMMERCIAL/INDUSTRIAL
DEED RESTRICTION

PEOPLES GAS
UNDERGROUND PIPING
PEOPLES GAS
SITE

OVERHEAD ELECTRIC
LINES

AREA WITH NO
FUTURE LAND USE
RESTRICTION

LEGEND:



= COMMERCIAL/INDUSTRIAL DEED RESTRICTION AREAS



= FOCUSED AREA OF INVESTIGATION

~ ~ ~ = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)

0 25 50 100

SCALE IN FEET

PEOPLES GAS

ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 7

**FOCUSED AREA OF INVESTIGATION
INCLUDING AREAS WITH INDUSTRIAL/
COMMERCIAL FUTURE LAND USE
RESTRICTIONS/SITE BASE MAP**

DWG NO.: 30413-002.PEOPLE-6

DAMES & MOORE

Appendix A Soil Boring Logs

BORING PG-1

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
					5
	24				
					10
	80				
					15
	52				
					20
	29				
					25
	23				
					30
	22				
					35
	19				

Four-inch gravel surface.
Brown and dark brown silty CLAY to clayey SILT
with some fine to coarse sand and fine gravel.
(Slightly moist)

Olive gray silty CLAY to clayey SILT with some
fine sand. (Slightly moist)

Olive gray silty CLAY with some fine to coarse
sand. (Slightly moist)

Grades to (Very moist)

Boring completed at depth of 25 feet on 01-26-96.
Groundwater encountered at depth of 12 feet
during drilling on 01-25-96.

NOTE:

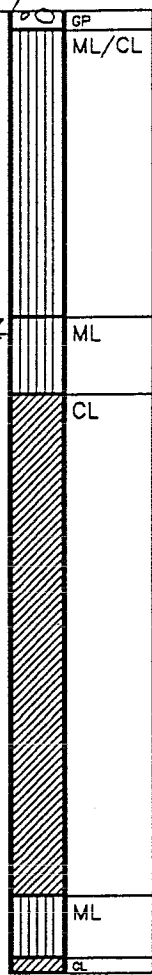
Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-2

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
	199		☒		5
	21		☒		10
	51		☒		15
	18		☒		20
	19		☒		25
	18		☒		30
	15		☒		35



Four to six-inch gravel surface.
Olive gray silty CLAY to clayey SILT with some fine to coarse sand. (Slightly moist)

Olive gray sandy SILT. (Moist)

Olive gray silty CLAY with some fine to coarse sand. (Moist)

Olive gray silty CLAY with some fine sand. (Moist)

Olive gray sandy SILT.

Olive gray silty CLAY.

Boring completed at depth of 25 feet on 01-26-96.
Groundwater encountered at depth of 8.5 feet during drilling on 01-26-96.

NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-3

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
					GP
					CL
	49		⊗		5
					10
	287		⊗		10
	258		⊗		15
	20		⊗		15
					20
	193		⊗		20
					25
	14		⊗		25
					30
					35

Four-inch gravel surface.
Brown and yellowish brown silty CLAY with some fine to coarse sand and gravel. (Fill)

No recovery.

Olive gray silty CLAY with some fine sand and trace of brown silty clay. (Moist)

Olive gray silty CLAY with some fine sand. (Moist)

Grades with some fine gravel.

Olive gray silty CLAY with some fine sand. (Moist)

Boring completed at depth of 25 feet on 01-26-96.
Groundwater encountered at depth of 9 feet during drilling on 01-26-96.

NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-4

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
			☒		1
					5
			☒		9
	17		☒		10
	13		☒		13
	30		☒		14
					15
	17		☒		20
					25
	16		☒		26
					30
					35

Four-inch gravel surface.
Black and dark brown silty CLAY with some fine to coarse sand and gravel. (Slightly moist)

Olive gray silty CLAY with some fine sand. (Moist)

Brownish gray silty CLAY with some fine to coarse sand and gravel. (Moist)

Olive gray silty CLAY with some clayey sand. (Moist)

Boring completed at depth of 25 feet on 01-26-96.
Groundwater encountered at depth of 14 feet during drilling on 01-26-96.

NOTE:

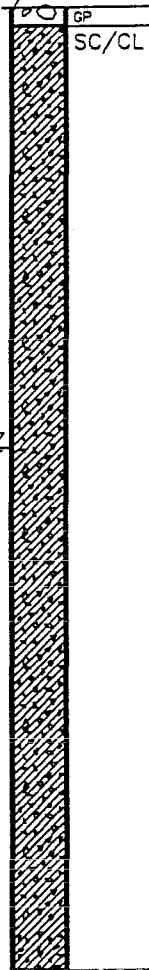
Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-5

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
			☒		5
			☒		10
	21		☒		11.5
	23		☒		12.5
	17		☒		15
	21		☒		20
	18		☒		25
					30
					35



Four-inch gravel surface.
Dark gray silty CLAY to clayey SILT with some fine sand and gravel. (Slightly dry)

Dark gray silty CLAY with some fine to coarse sand and gravel.

Olive gray silty CLAY with some fine sand.
(Slightly moist to very moist)

Grades to (Moist)

Boring completed at depth of 25 feet on 01-26-96.
Groundwater encountered at depth of 11.5 feet during drilling on 01-26-96.

NOTE:

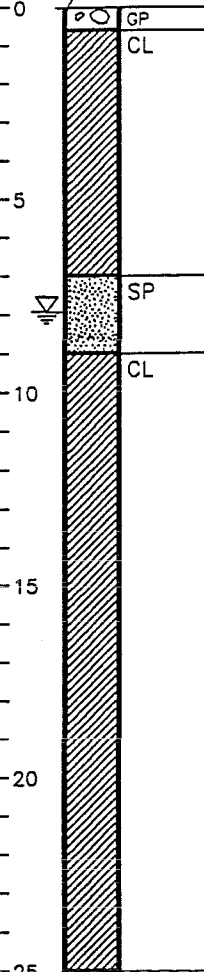
Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-6

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------



Four-inch gravel surface.
Hole was pre-augered to six-feet.
Four to six-inch gravel surface overlying dark brown silty CLAY fill with some sand and gravel.

Dark gray fine to coarse sand. (Very moist)

Dark gray and olive gray silty CLAY. (Very moist)

Dark gray silty CLAY with fine to coarse sand. (Wet)

Olive gray silty CLAY with some sand. (Moist)

Boring completed at depth of 25 feet on 01-25-96.
Groundwater encountered at depth of 8 feet during drilling on 01-25-96.

NOTE:

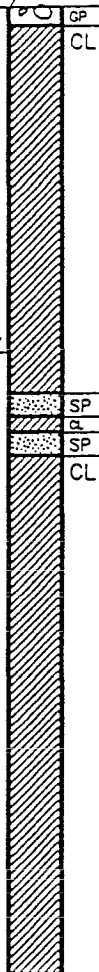
Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-7

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
					5
	0.6		⊗		
			⊗		
					10
	2.4		⊗		
	0.6		⊗		
					15
	1.4		⊗		
					20
	1.1				
					25
					30
					35



Three to five-inch gravel surface.
Hole was pre-augered to six-feet.
Brown and olive gray silty CLAY with some fine to coarse sand.

Olive gray with some trace of brown to brownish yellow silty CLAY with some fine sand. (Moist)

Olive gray silty CLAY with layer of brown medium to coarse sand. (Wet)

Olive gray fine to coarse SAND with fine gravel.
Olive gray silty CLAY with fine sand. (Very moist)
Olive gray silty CLAY with some fine sand. (Moist)

Grades to (Very moist)

Boring completed at depth of 25 feet on 01-25-96.
Groundwater encountered at depth of 9 feet during drilling on 01-25-96.

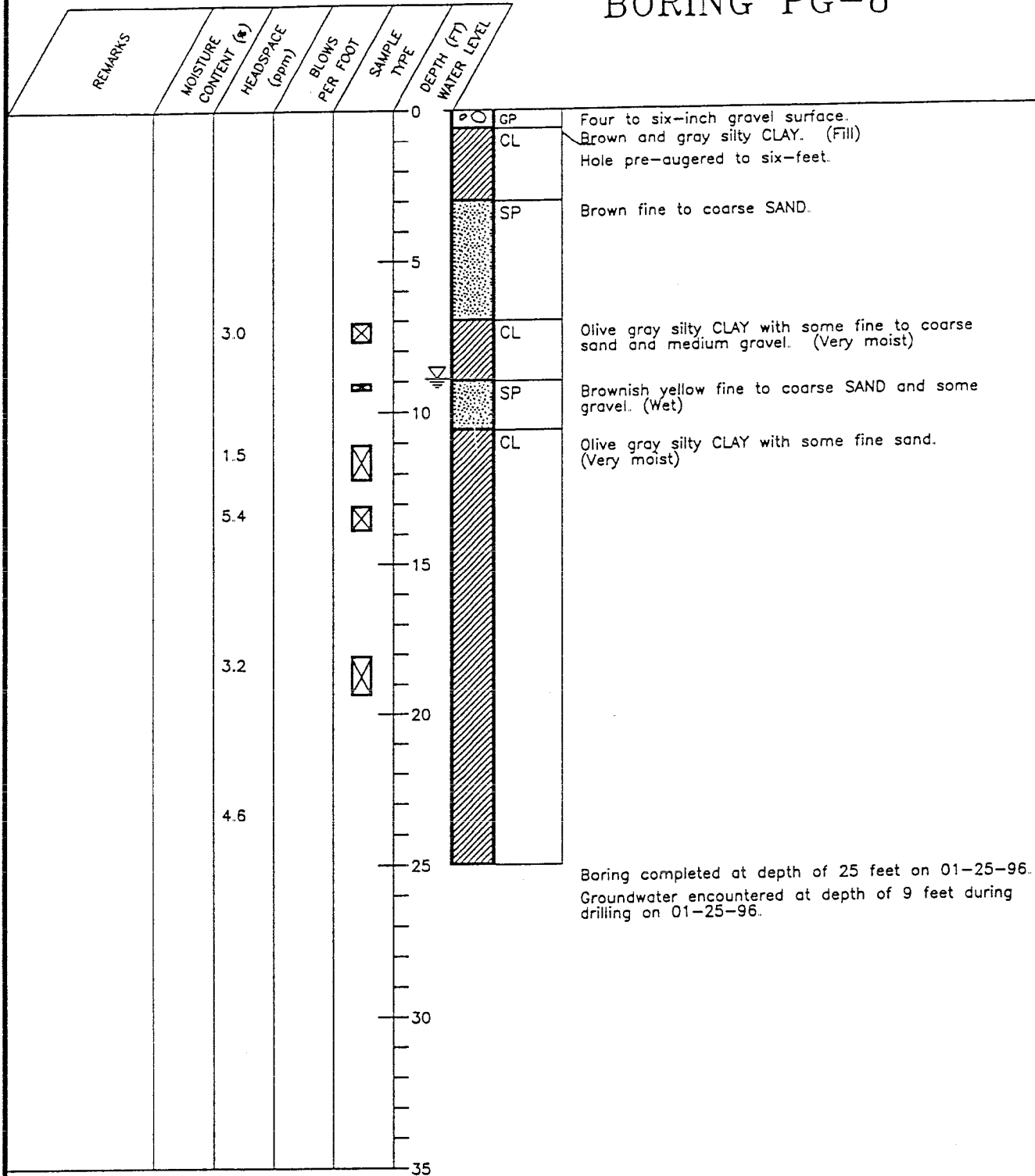
NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-8



NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-9

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT)	WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	------------	-------------

					0	GP
						CL
					5	
	19		☒			
	26		☒		10	
	26					
	22					
					15	
	24					
					20	
	13				25	
					30	
					35	

Six-inch gravel surface.
Brown and gray silty CLAY with some fine to coarse sand and gravel.
Hole pre-augered to six-feet.

Olive gray silty CLAY with some fine sand and pockets of dark silty clay. (Very moist)

Olive gray silty CLAY with some sand.
(Very moist to wet)

Olive gray silty CLAY. (Very moist)

Olive gray sandy SILT. (Very moist)

Boring completed at depth of 25 feet on 01-25-96.
Groundwater encountered at depth of 8.5 feet during drilling on 01-25-96.

NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-10

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
	1.5				0
					1
	1.9				2
					3
	1.6				4
					5
	1.1				6
					7
	1.4				8
					9
	0.7				10
	0.8				11
					12
					13
					14
					15
					16
					17
					18
					19
					20
					21
					22
					23
					24
					25
					26
					27
					28
					29
					30
					31
					32
					33
					34
					35

Five-inch gravel surface.
Yellowish red sandy SILT.
(Medium dense) (Slightly moist)

Yellowish red and dark brown sandy SILT.
(Slightly moist)

Olive gray and dark brown silty CLAY with some
fine sand. (Soft) (Moist)

Olive gray silty CLAY with some fine sand.
(Soft) (Moist)

Olive gray silty CLAY with some fine sand.
(Soft) (Wet)

Olive gray silty CLAY.

Olive gray silty CLAY. (Medium stiff) (Moist)

Boring completed at depth of 15 feet and
backfilled with bentonite on 08-21-96.
Groundwater encountered at depth of 10 feet
during drilling on 08-21-96.

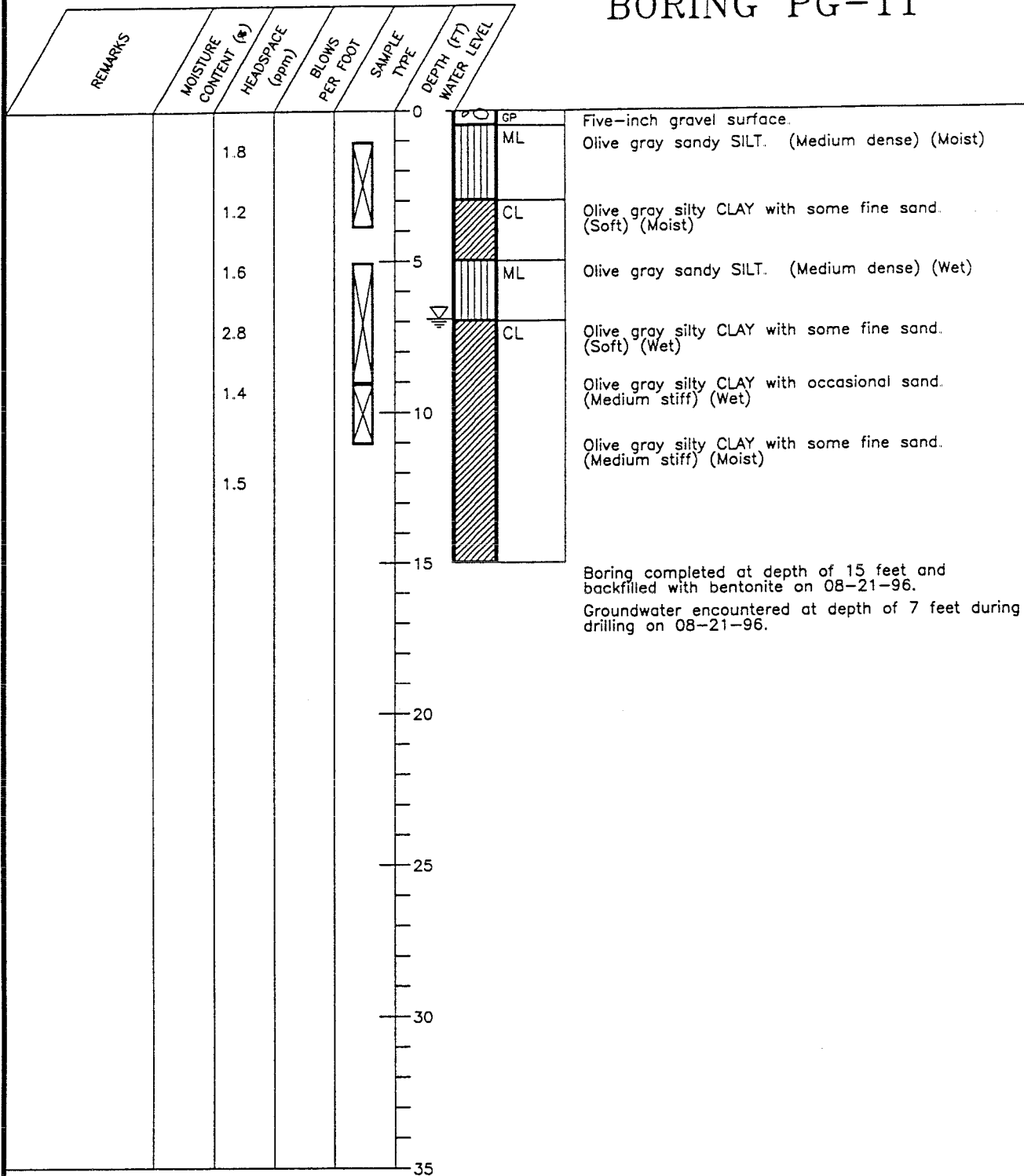
NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-11



NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-12

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
	1.1				0
	1.4				
	0.9				5
	0.8				
	2.6				10
	1.6				
	1.2				
					15
					20
					25
					30
					35

Three-inch gravel surface.

CL
Dark brown silty CLAY with some fine sand and coarse gravel. (Soft) (Dry) (Fill)

CL
Olive gray silty CLAY with some fine sand. (Soft) (Moist)

CL
Olive gray silty CLAY with some fine sand. (Medium stiff) (Moist)

CL
Olive gray silty CLAY with some fine sand. (Medium stiff) (Moist)

Olive gray silty CLAY with some fine gravel and fine sand. (Soft) (Moist)

Olive gray silty CLAY with some fine sand. (Soft) (Moist)

Boring completed at depth of 15 feet and backfilled with bentonite on 08-21-96.
Groundwater was not encountered during drilling on 08-21-96.

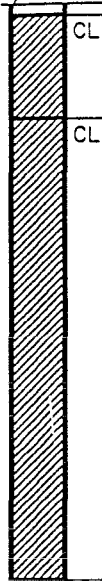
NOTE:
Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-13

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
	5.0				0
	4.8				
	3.6				5
	2.5				
	2.9				10
	2.6				
	3.0				15
					20
					25
					30
					35



Three-inch asphalt and gravel surface.

Dark brown and yellowish red silty CLAY with occasional coarse gravel and some fine sand. (Stiff) (Dry) (Fill)

Brown and yellowish red silty CLAY with some fine sand and some fine gravel.

Dark brown silty CLAY with some fine sand. (Stiff) (Dry)

Olive gray silty CLAY with some fine sand. (Medium stiff) (Moist)

Olive gray silty CLAY with some fine sand. (Soft) (Moist)

Boring completed at depth of 15 feet and backfilled with bentonite on 08-21-96.
Groundwater was not encountered during drilling on 08-21-96.

NOTE:

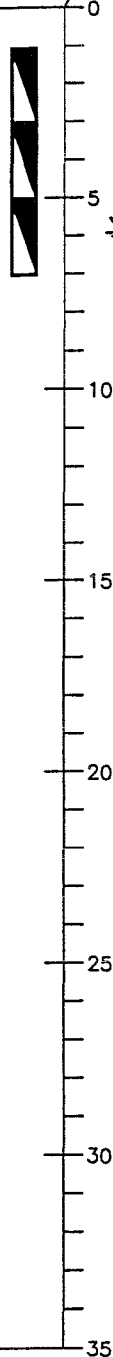
Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-14

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------



CL
CL

Loamy Clay. (Friable)

Clay. (Stiff) (Dry)

Clay. (Stiff) (Moist)
(Wet)

Boring completed at depth of 6.75 feet on
08-30-96.

Groundwater encountered at depth of 6 feet during
drilling.

NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-15

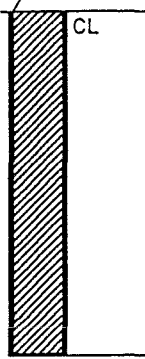
REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------

5.6

16

19

2.0



Clay. (Very stiff) (Friable)

Clay. (Very stiff) (Dry)

Clay. (Very stiff) (Dry to slightly moist)

Boring completed at depth of 9 feet on 08-30-96.
Groundwater was not encountered during drilling.

NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-16

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------



CL
CL

Clay. (Stiff) (Friable)

Clay. (Stiff) (Dry)

Refusal at 5 feet.

Boring completed at depth of 5 feet on 08-30-96.

Groundwater was not encountered during drilling.

NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING PG-17

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
					5
					10
					15
					20
					25
					30
					35

CL

Dark gray to black silty CLAY with some sand and gravel and roots. (No odor)

Grades to brown and gray silty CLAY with some sand and gravel. (Stiff) (Moist)

Grades to olive gray silty CLAY with some sand and gravel. (Medium stiff) (Moist)

Grades to (Soft) (Very moist)

Boring completed at depth of 25 feet on 12-12-97.
Groundwater was not encountered during drilling.

LOG OF BORING

DAMES & MOORE

BORING PG-18

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
					5
					10
					15
					20
					25
					30
					35

CL

Black and dark gray silty CLAY with some sand and roots. (Moist)

Grades to brown and gray silty CLAY with some sand and gravel. (Stiff) (Moist)

Grades with 6-inch seam of sand and gravel. (Wet)

Grades to olive gray with trace of brown silty CLAY with some sand and gravel. (Stiff) (Moist)

Grades to (Soft) (Very moist)

Boring completed at depth of 25 feet on 12-12-97.
Groundwater encountered at depth of 8 feet during drilling on 12-12-97.

LOG OF BORING

DAMES & MOORE

BORING PG-19

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
					5
					10
					15
					17
					20
					25
					30
					35

CL

Black and dark gray silty CLAY with some sand and roots. (Moist)

Grades to brown and gray silty CLAY with some sand and gravel. (Stiff) (Moist)

Grades to olive gray.

Grades to (Soft) (Very moist)

Boring completed at depth of 25 feet on 12-12-97.
Groundwater encountered at depth of 17 feet during drilling on 12-12-97.

LOG OF BORING

DAMES & MOORE

BORING PG-20

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
					5
					10
					15
					20
					25
					30
					35

CL

Black and dark gray silty CLAY with sand and roots. (Moist)

Grades to brown and gray silty CLAY with some sand and gravel. (Stiff) (Moist)

Grades to olive gray. (Soft) (Very moist)

Grades with thin layer of fine to coarse sand and fine gravel. (Wet)

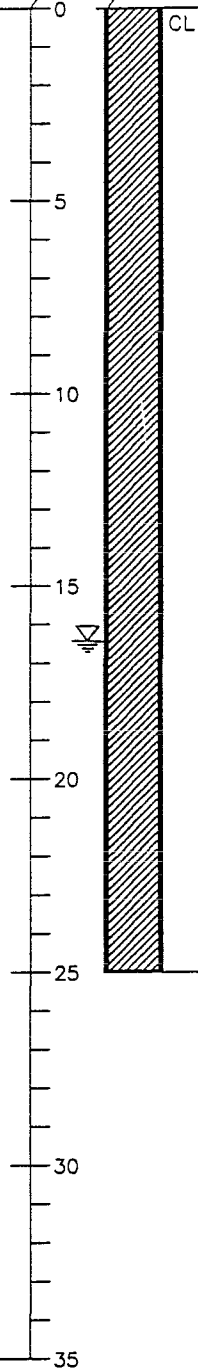
Boring completed at depth of 25 feet on 12-12-97.
Groundwater encountered at depth of 11 feet during drilling on 12-12-97.

LOG OF BORING

DAMES & MOORE

BORING PG-21

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------



Black and dark gray silty CLAY with sand and roots. (Moist)

Brown and gray silty CLAY with some sand and gravel. (Stiff) (Moist)

Grades to gray with brown.

Grades to olive gray. (Soft) (Very moist)

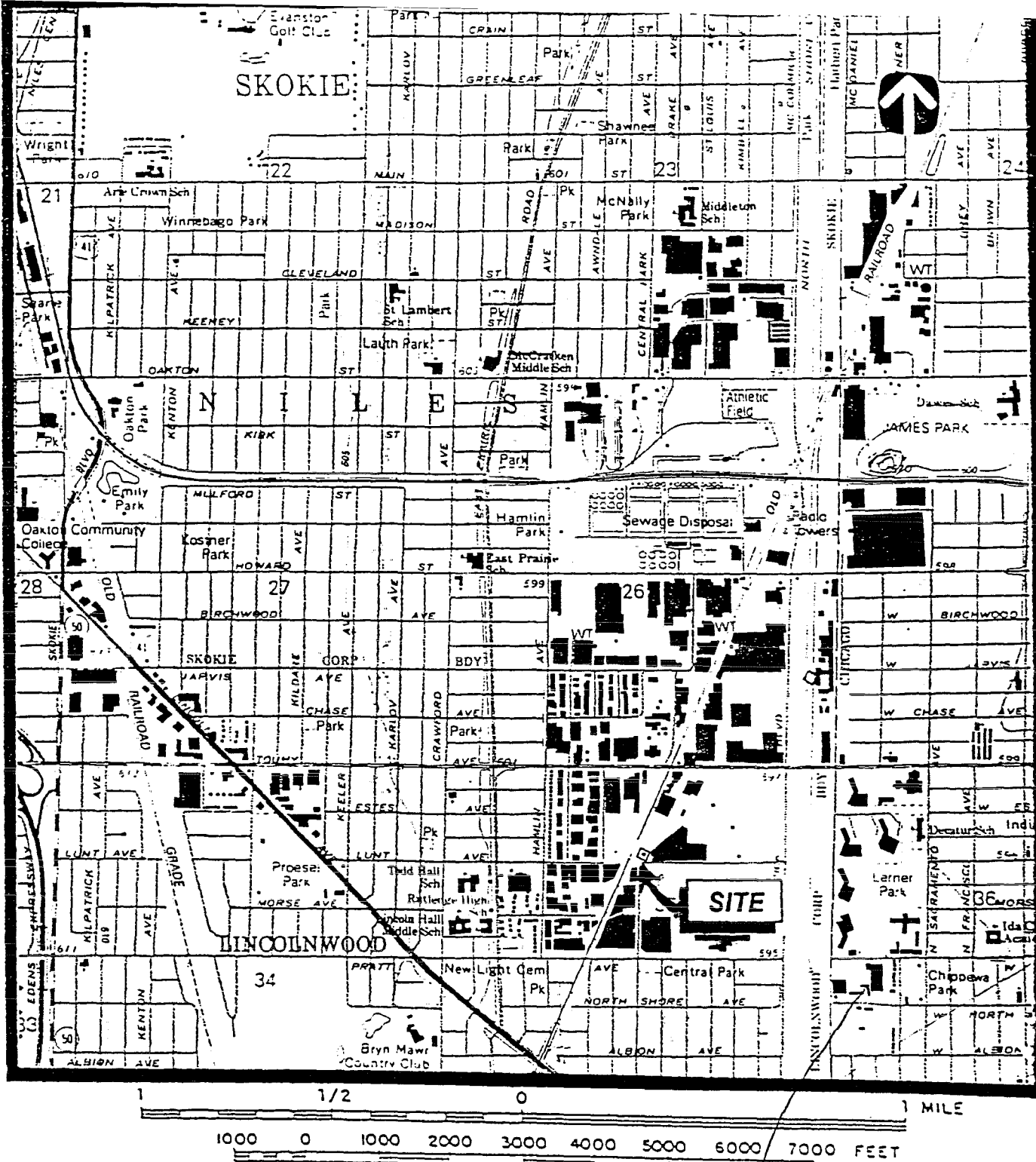
Boring completed at depth of 25 feet on 12-12-97.
Groundwater encountered at depth of 16.5 feet during drilling on 12-12-97.

LOG OF BORING

DAMES & MOORE

Appendix B

Off-Site Boring Logs/Location Maps



CP Clare / General Instrument Site

LINCOLNWOOD, ILLINOIS

FIGURE 1
SITE LOCATION MAP
80' DEEP SOIL BORING

Dames & Moore

MAP REFERENCE:
U.S.G.S. QUADRANGLE MAP
7 1/2 MINUTE SERIES (TOPOGRAPHIC)
EVANSTON, ILLINOIS 1993.

BORING DM-1

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
					0
				SM	
					Silty Sand and Pea Gravel with Slight Vegetation
			3		
					Dark Brown to Black Silty Sand with Some Fine Gravel and Wood Chips and Trace Fine Roots (Very Loose) (Very Moist) (Organic) (Fill)
PSS = 2500			6		
				CL	
					Brown to Brownish Yellow to Gray Silty Clay with Some Sand and Trace Fine Gravel (Stiff) (Moist)
PSS = 400			5		
					Grades to Brown to Gray Sandy Clay with Some Silt (Soft) (Very Moist)
PSS = 500			4		
					Grades to Brown to Gray Silty Clay with Some Sand and Trace Fine Gravel (Soft) (Moist)
PSS = 1000			10		
					Grades to (Medium Stiff to Stiff)
PSS = 500			6		
					Grades to (Soft) (Moist)
PSS = 400			5		
			7		
					Grades to (Stiff) (Moist)
PSS = 2000			17		
					Grades to Brown to Gray Sandy Clay with Some Fine Gravel (Stiff) (Moist)
PSS = 3000			16		
					Grades to Brown to Gray Silty Clay with Some Sand and Fine Gravel (Very Stiff) (Moist)
			38		
				ML	
					Brown to Gray Sandy Silt (Dense) (Moist)
			32		
					Brown to Gray Sandy Silt with Some Fine Gravel and Trace Clay (Dense) (Moist)
PSS = 3000			24		
				CL	
					Brown Silty Clay with Some Sand and Fine Gravel (Very Stiff) (Moist)
			36		
				ML	
					Brown Sandy Silt with Some Fine Gravel and Trace Clay (Dense) (Moist)
					70

NOTE:

PSS = pocket penetrometer shear strength (psf)

LOG OF BORING

DAMES & MOORE

BORING DM-1

(Continued)

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------

PSS = 4500+			58	ML	70
			100/9	SM	80
			100/0	ROCK	83
					90
					100
					110
					120
					130
					140

Brown Clayey Silt with Some Sand and Fine Gravel
(Very Dense to Hard) (Moist)

Brown Silty Sand with Trace Clay and Fine Gravel
(Very Dense) (Moist)

Bedrock
Boring completed at depth of 83 feet on 2-20-95.
Water encountered at depth of 8.5 feet during
drilling.

NOTE:

PSS = pocket penetrometer shear strength (psf)

LOG OF BORING

DAMES & MOORE



NORTH


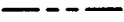








0 25 50 100

SCALE IN FEET

SB-3

LEGEND:

ASPHALT PAVED
PARKING AREA

- SB-27  = GEOTECHNICAL SOIL BORING LOCATION
-  = PROPERTY LINE
-  = CHAIN-LINK FENCE
-  = GUARD RAIL FENCE
-  = CATCH BASIN
-  = MANHOLE
-  = LIGHT POLE
-  = FIRE HYDRANT
-  = FIRE VALVE
-  = UTILITY POLE

SB-50

BUTLER BU

3101 WEST PRATT AVENUE SITE
CHICAGO, ILLINOIS

FIGURE B-1
GEOTECHNICAL SOIL
BORING LOCATIONS

DWG NO.: 30413-002.CLARE-46

DAMES & MOORE

BORING SB-3

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
Hg = 0.007	32	12			0
Hg = 0	2	9			
		6			5
Hg = 0 PSI = 1250	4	4			
Hg = 0 PSI = 750	4				10
Hg = 0	3				
Hg = 0	2				
		4			15
Hg = 0	4				
Hg = 0	3				20
Hg = 0	0				
		4			
	0	7			25
	0	5			
	0	5			30
	0	5			
		5			35

GP Four-inch asphalt overlying six-inch gravel.
ML Dark brown sandy silt with some clay, natural
topsoil. (Moist)
CL Brown to trace silty clay with trace sand and
gravel. (Stiff) (Moist)

Grades to (Soft) (Moist to wet)

Grades to gray. (Very soft) (Moist to wet)

Grades to (Medium stiff) (Moist)

NOTE:

Headspace reading was obtained using PID.
Hg reading obtained using Mercury Vapor Analyzer.

LOG OF BORING

DAMES & MOORE

BORING SB-3

(Continued)

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT)	WATER LEVEL
	0	5	5	CL	35	
	0	6	6	CL	38	
		13			40	
	0	11	11	CL	42	
PSI = 2000	0	11			44	
PSI = 2000	0	7	7		45	
PSI = 2000	0	15			48	
PSI = 2000	0	9	9		50	
					55	
					60	
					65	
					70	

Grades to olive gray silty clay with trace sand and gravel. (Stiff) (Moist)

Boring completed at depth of 51 feet on 03-10-95.
Ground water level was unknown due to rotary wash drilling technique used on 03-10-95.













NOTE:

Headspace reading was obtained using PID.
Hg reading obtained using Mercury Vapor Analyzer.

LOG OF BORING

DAMES & MOORE

BORING SB-27

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
Hg = 0	0	8		SM	0
Hg = 0.007	0	4		CL	1
	0	4			5
Hg = 0.005	0	4			
Hg = 0.005	0	2			10
Hg = 0.004	0				
Hg = 0.004	0				
Hg = 0.004	0				15
Hg = 0.003	1				
					20
Hg = 0.003	0				
Hg = 0.003	0				25
					30
Hg = 0.003	0				35

Three-inch asphalt.

Brown to dark brown fine to coarse sand with some fine gravel and some silt. (Moist) (Fill) (Brick fragments)

Brown to gray silty clay with trace sand gravel and trace organics. (Soft) (Moist)

Grades with gray silty CLAY with trace sand and gravel. (Soft) (Moist)

Grades to (Very soft) (Moist to wet)

Grades to (Medium stiff) (Moist to wet)

NOTE:

Headspace reading was obtained using PID.
Hg reading obtained using Mercury Vapor Analyzer.
PSI reading obtained using Pocket Penetrometer.

LOG OF BORING

DAMES & MOORE

BORING SB-27

(Continued)

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT)	WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	------------	-------------

Hg = 0
PSI = 750

0



35

40

Grades to (Soft) (Moist to wet)

Hg = 0.003

0

11



45

Grades with some fine to coarse sand and fine gravel. (Stiff) (Moist)

Hg = 0.003

0

10



50

Grades with trace sand and gravel. (Stiff) (Moist)

Boring completed at depth of 50 feet on 03-10-95.
Ground water level was unknown due to rotary wash drilling method used on 03-10-95.

55

60

65

70

NOTE:

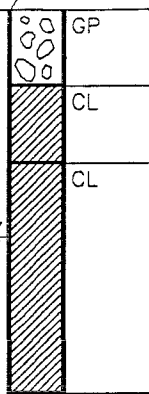
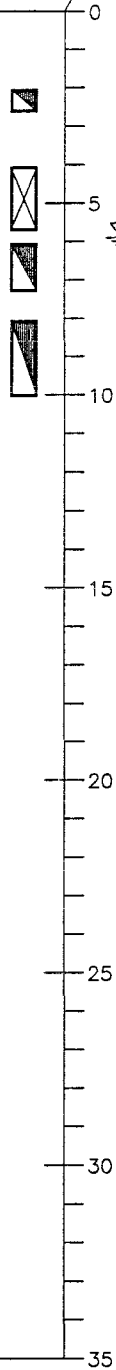
Headspace reading was obtained using PID.
Hg reading obtained using Mercury Vapor Analyzer.
PSI reading obtained using Pocket Penetrometer.

LOG OF BORING

DAMES & MOORE

BORING SB-47

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT)	WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	------------	-------------



Three-inch of asphalt overlying gray fine to coarse GRAVEL and sand. (Slightly moist) (Fill) (Odor)

Dark gray with gray and some brown silty CLAY with some sand and gravel. (Slightly moist) (Fill)

Brown and gray silty CLAY with some sand and gravel. (Medium stiff) (Moist)

Grades to (Soft).

Grades to gray.

Boring completed at depth of 10 feet on 07-11-95.
Ground water encountered at depth of 6 feet during drilling on 07-11-95.

NOTE:

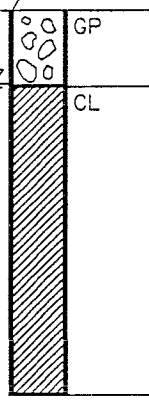
PID = Photo Ionization Detector
Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING SB-48

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------



Three-inch asphalt overlying dark gray to black fine to coarse sand and GRAVEL. (Moist) (Fill)

Brown with some gray silty CLAY with some sand and gravel. (Medium stiff) (Slightly moist to moist)

Grades to gray. (Soft) (Moist)

Boring completed at depth of 10 feet on 07-11-95.
Ground water encountered at depth of 2 feet during drilling on 07-11-95.

NOTE:

Headspace readings were obtained using PID.

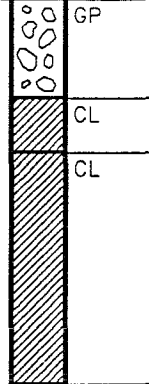
LOG OF BORING

DAMES & MOORE

BORING SB-49

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------

					0
	9.5	7	☒		
	2.4	0			5
	2.9	3	☒		
	2.1	0	☒		10
					15
					20
					25
					30
					35



Three-inch asphalt overlying dark gray and gray fine to coarse sand and GRAVEL. (Slightly moist) (Fill)

Black to brown silty CLAY with some sand and gravel. (Medium stiff) (Moist) (Fill)

Brown with some gray silty CLAY with some sand and gravel. (Medium stiff) (Moist)

Grades to (Soft).

Grades to gray.

Boring completed at depth of 10 feet on 07-11-95.
Ground water was not encountered during drilling on 07-11-95.

NOTE:

Headspace readings were obtained using PID.

LOG OF BORING

DAMES & MOORE

BORING SB-50

REMARKS	MOISTURE CONTENT (%)	HEADSPACE (ppm)	BLOWS PER FOOT	SAMPLE TYPE	DEPTH (FT) WATER LEVEL
---------	-------------------------	--------------------	-------------------	----------------	---------------------------

					0
	6.2	0			
	3.2	8			
	5	4			
	1.9	0			
					10
					15
					20
					25
					30
					35

GP
Three-inch asphalt overlying gray sand and GRAVEL. (Slightly moist) (Fill)

CL
Dark gray to brown with some gray silty CLAY with some sand and gravel. (Medium stiff) (Moist) (Fill)

CL
Brown with some gray silty CLAY with some sand and gravel. (Medium stiff) (Moist)

Grades to gray. (Soft)

Boring completed at depth of 10 feet on 07-11-95.
Ground water encountered at depth of 4 feet during drilling on 07-11-95.

NOTE:

Headspace reading was obtained using PID.

LOG OF BORING

DAMES & MOORE

Appendix C

Geotechnical Data

PERMEABILITY TEST BY BACK PRESSURE CONSTANT HEAD (Pbp)

Owner CP CLARE
Job # 30413-001
Location _____
Boring # SB-3
Sample # SH2cBY
Depth (9-11) 10.5'

Deflecting Speed _____ 5 in/Hr
Min

Lateral Pressure _____ 7 PSF
PSI

Saturated ☒ Field Moisture ☐
Set-Up 3/28/95 Tested EGX (162 Office)

Soil Type CL/ML



	Initial	Final
Weight soil & dish no. <u>M-23</u>	<u>251.6</u>	
Dry weight soil & dish	<u>222.2</u>	
Net loss of moisture		
Weight of dish only	<u>113.6</u>	
Net weight of dry soil		
Moisture, % of dry weight	<u>27.1</u>	<u>24.1</u>
<hr/>		
Wt. solids + moisture	<u>W₀ 443.3</u>	<u>433.1</u> gms.
$W_0 \div 454$	<u>W₀'</u>	<u></u> lbs.
Weight solids	<u>W_s 348.9</u>	<u></u> gms.
Wet density $W_0' \div V_0'$	<u>122.7</u>	<u>127.4</u> pcf
Dry density	<u>96.6</u>	<u>102.7</u> pcf
<hr/>		
Net diameter	<u>D₀ 2.416</u>	<u></u> in.
Area ($0.785 D_0^2$)	<u>A₀ 4.562</u>	<u>4.351</u> sq. in.
Height	<u>H₀ 3.50</u>	<u>2.973</u> in.
Volume ($A_0 H_0$) $\div 1728$	<u>V₀'</u>	<u></u> cu. ft.
Volume ($A_0 H_0$) $\times 16.4$	<u>V₀ 225.44</u>	<u>212.14</u> cc
Specific gravity of solids	<u>G_s</u>	<u></u>
Volume of solids $W_s = G_s$	<u>V_s</u>	<u></u> cc
$(V_0 - V_s) \div V_s$	<u>e_i</u>	<u></u>
Initial burette reading	<u></u>	<u></u> cc
Burette reading under pressure	<u></u>	<u></u> cc
$(V_p - V_s) \div V_s$	<u>e_p</u>	<u></u>

$$K_{AV} = 2.72 \times 10^{-8} \text{ cm/s}$$

DAMES & MOORE
SATURATION DATA

PROJECT: CP NO.: 30413-001 LOCATION: _____

Boring No.: SB-3 Sample: CHGB-1 Depth: 10.5 (ft./m.) Set up: 26 / 3 / 28 / 95

$\sigma_3 = \underline{7}$ psi = 1008 psf Type of Test: Per Cell No.: _____ Dial No.: _____

[illegible]

PERMEABILITY TEST BY BACK PRESSURE CONSTANT-HEAD

CP

Boring SB-3
Shelby Tube at 10.5 feet

		Initial	Final
Wet Density	pcf	122.7	127.4
Dry density	pcf	96.6	102.7
% Moisture		27.1	24.1

Height Initial	3.000	251.6	Wet soil and dish
Diameter Initial	2.416	222.2	Dry soil and dish
Area Initial	4.582	113.6	dish only
Volume Initial	225.44	443.3	Ws Initial
Initial dial	0.273	433.1	Final Ws
Final dial	0.3	348.9	Weight solids
Initial cc/in res	8		
Final cc/in res.	26.8		

Height Final	2.973	7.551	cm
Diameter Final	2.354		
Area Final	4.351	28.093	cm^2
Volume Final	212.14		

Height change	-0.027		
cc/in reser.	0.013		
Volume change	-18.8		
Cell Change	5.5 @ 46 psi		
Net Volume Change	-13.3		
h= T/B PRESS. diff	3	210.30	cm

Standard Water .005 N CaSO4

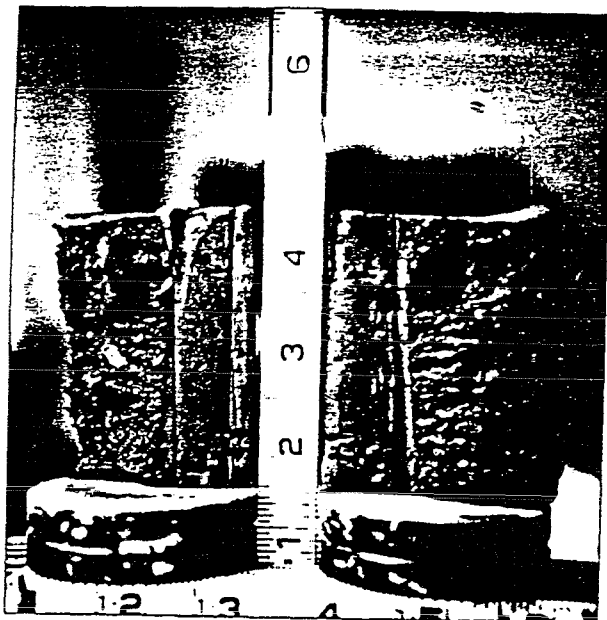
Hydraulic Gradient	Elapsed Time	cc's	K
27.85	minutes		cm/sec
	102.00	0.20	3.89E-08
	842.00	1.00	2.36E-08
	94.00	0.10	2.11E-08
	79.00	0.10	2.51E-08

+-----+	
	K Average = 2.72E-08 cm/s
+-----+	

DANIELS & MOORE
PERMEABILITY TEST BY BACK PRESSURE
CONSTANT HEAD (Pbp)

Owner CP
 Job # 30413-001-
 Location _____
 Boring # SB-27
 Sample # _____
 Depth (27-28) 27.5'

Deflecting Speed _____ 5 in/Hr
 Lateral Pressure _____ 14 PSE
 Saturated ☒ Field Moisture ☐
 Set-Up 3/29/95 Tested FAL (162 Office)
 Soil Type CL



	Initial	Final
Weight soil & dish no <u>M-10</u>	<u>220.3</u>	
Dry weight soil & dish	<u>201.7</u>	
Net loss of moisture		
Weight of dish only	<u>113.2</u>	
Net weight of dry soil		
Moisture, % of dry weight	<u>21.0</u>	<u>19.3</u>
Wt. solids + moisture	<u>W₀ 422.7</u>	<u>476.0</u> gms.
W ₀ ÷ 454	<u>W₀'</u>	lbs.
Weight solids	<u>W_s 398.9</u>	gms.
Wet density W ₀ ' ÷ V ₀ '	<u>133.7</u>	<u>132.9</u> pcf
Dry density	<u>110.4</u>	<u>111.3</u> pcf
Net diameter	<u>D₀ 2.416</u>	in.
Area (0.785 D ₀ ²)	<u>A₀ 4.582</u>	<u>4.595</u> sq. in.
Height	<u>H₀ 3.00</u>	<u>2.967</u> in.
Volume (A ₀ H ₀) ÷ 1728	<u>V₀'</u>	cu. ft.
Volume (A ₀ H ₀) × 16.4	<u>V₀ 225.44</u>	<u>223.61</u> cc
Specific gravity of solids	<u>G_s</u>	
Volume of solids W _s ÷ G _s	<u>V_s</u>	cc
(V ₀ - V _s) ÷ V _s	<u>e_i</u>	
Initial burette reading		cc
Burette reading under pressure		cc
(V _p - V _s) ÷ V _s	<u>e_p</u>	

$$K_{AV} = 3.67 \times 10^{-3} \text{ cm/s}$$

SATURATION DATA

LOCATION:

3, 29, 95

Dial No.:

[illegible]

PERMEABILITY TEST BY BACK PRESSURE CONSTANT-HEAD

CP

Boring SB-27
Shelby Tube at 27.5 feet

		Initial	Final
Wet Density	pcf	133.7	132.9
Dry density	pcf	110.4	111.3
% Moisture		21.0	19.3

Height Initial	3.000	220.3	Wet soil and dish
Diameter Initial	2.416	201.7	Dry soil and dish
Area Initial	4.582	113.2	dish only
Volume Initial	225.44	482.7	Ws Initial
Initial dial	0.677	476	Final Ws
Final dial	0.71	398.9	Weight solids
Initial cc/in res	-0.487		
Final cc/in res.	-0.402		

Height Final	2.967	7.536	cm
Diameter Final	2.420		
Area Final	4.595	29.672	cm ²
Volume Final	223.61		

Height change	-0.033
cc/in reser.	0.011
Volume change	-7.72727
Cell Change	5.9 @ 53 psi
Net Volume Change	-1.82727
h= T/B PRESS. diff	3 210.30 cm

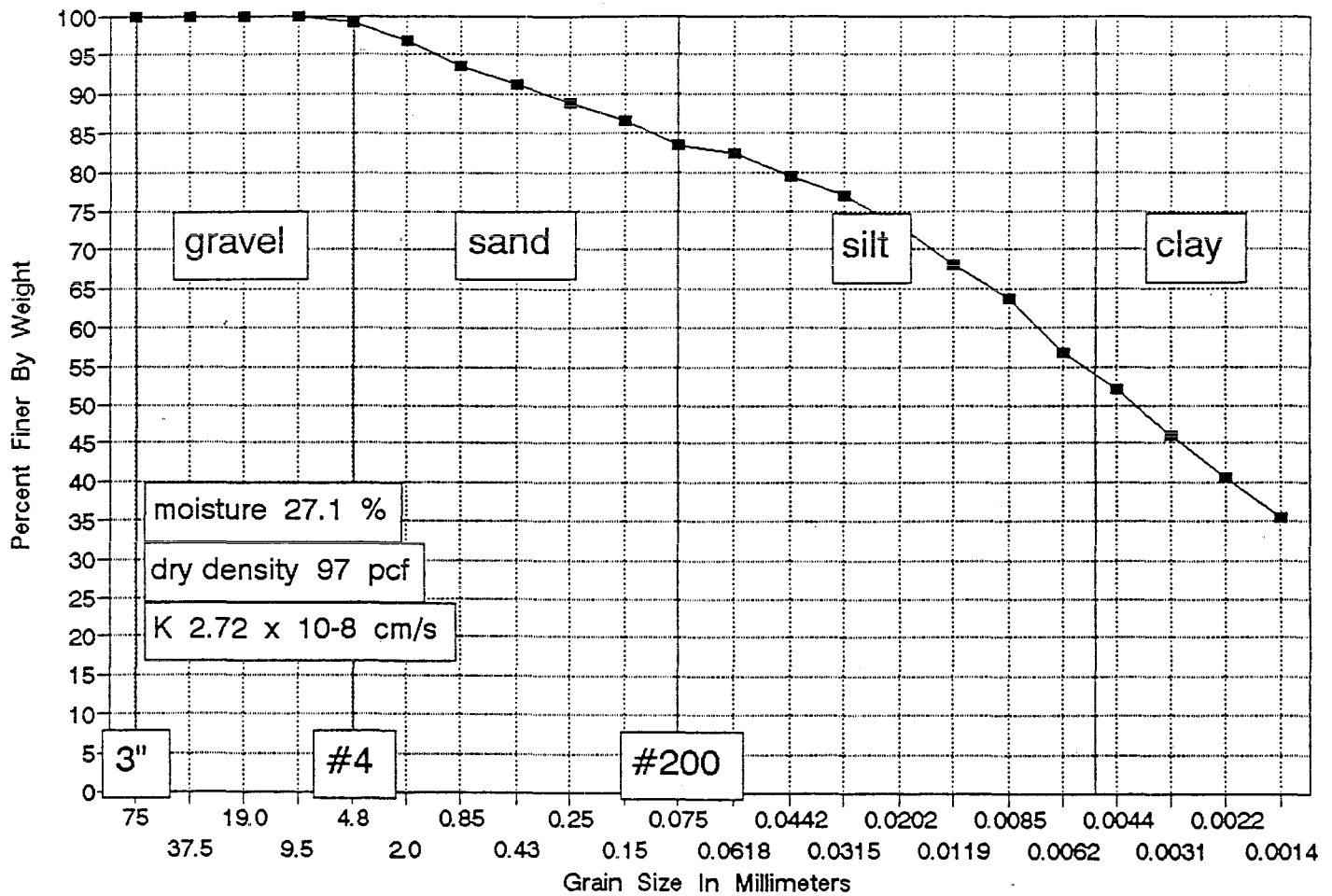
Standard Water .005 N CaSO4

Hydraulic Gradient	Elapsed Time	cc's	K
27.91	minutes		cm/sec
	49.00	0.10	3.82E-08
	201.00	0.40	3.73E-08
	268.00	0.60	4.20E-08
	901.00	1.40	2.91E-08

+-----+-----+-----+-----+-----+	
	K Average = 3.67E-08 cm/s
+-----+-----+-----+-----+-----+	

GRADATION CURVE

Boring SB-3, sample at 10.5 feet



CP

field

Boring SB-3		Wt soil and dish	251.6
sample at 10.5 feet		Dry soil & dish	222.2
		dish	113.6
Moisture Content =	27.07 %	H	0
Wet Density =	ERR PCF	A	4.582
Dry Density =	ERR PCF	Ws	432.4

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample=	340.3
sample split -#10 sieve =	42.50

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	2.58	99.24%
# 10	11.27	96.69%
# 20	1.36	93.59%
# 40	2.42	91.18%
# 60	3.44	88.86%
# 100	4.47	86.52%
# 200	5.78	83.54%

Constants this test
Gs= 2.5 20c=.0143

When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	19	42.2	9.34	0.0618	85.17	82.35
1	19	40.9	9.55	0.0442	82.11	79.39
2	19	39.8	9.73	0.0315	79.52	76.89
5	19	38.1	10.01	0.0202	75.52	73.02
15	19	35.9	10.38	0.0119	70.35	68.02
30	19	34	10.69	0.0085	65.88	63.69
60	19	31	11.19	0.0062	58.82	56.87
120	19	28.9	11.53	0.0044	53.88	52.09
250	19	26.2	11.98	0.0031	47.52	45.95
500	19	23.8	12.37	0.0022	41.88	40.49
1425	19	21.6	12.74	0.0014	36.70	35.49

HYDROMETER ANALYSIS

OWNER CP DATE 3/29/95
 BORING NO. SS-5 STEELEY JOB NO. 30413-001
10.5

SAMPLE SPECIMEN NO.				CLASSIFICATION				
DISH NO. <u>345F</u>		GRADUATE NO. <u>5</u>		HYDROMETER NO. <u>152H</u>				
DISPERSING AGENT USED <u>SODIUM HEXAMETA PHOSPHATE</u> ; QUANTITY <u>5.00 GRAMS</u>								
DISPERSING AGENT CORRECTION, C_D <u>5</u> ; MENISCUS CORRECTION, C_M <u>1</u>								
TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R')	CORRECTED READING $R + C_M - C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER	
							PARTIAL	TOTAL
<u>0735</u>								
	<u>5</u>	<u>19</u>	<u>422</u>					
	<u>1.</u>	<u>19</u>	<u>402</u>					
	<u>2.</u>	<u>19</u>	<u>392</u>					
	<u>5.</u>	<u>19</u>	<u>321</u>					
	<u>15</u>	<u>19</u>	<u>359</u>					
	<u>30.</u>	<u>19</u>	<u>34</u>					
	<u>60.</u>	<u>19</u>	<u>31</u>					
	<u>120.</u>	<u>19</u>	<u>282</u>					
	<u>250</u>	<u>19</u>	<u>262</u>					
	<u>500</u>	<u>19</u>	<u>233</u>					
<u>0720</u>		<u>19</u>	<u>214</u>					
WEIGHT IN GRAMS	DISH PLUS DRY SOIL				SPECIFIC GRAVITY OF SOLIDS, G_s = CORRECTED HYDROMETER READING (R)			
	DISH							
	DRY SOIL							

540.94 - 596.32 = HYDROMETER READING (R') + C_M

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKES' EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKES' EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY W_s = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

$$\text{PARTIAL PERCENT FINER} = \frac{G}{G-1} \times \frac{100}{W_0} (R - C_D + M)$$

W_0 = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

HYDROMETER GRADUATED IN GRAMS PER LITER

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_0} (R - C_D + M)$$

W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_s - W_1}{W_s}$$

REMARKS _____

TECHNICIAN _____ COMPUTED BY _____ CHECKED BY SL

SA ☒ HA ☒ BLK SA ☐ -#200 ☐

OWNER/CLIENT CP JOB NUMBER 30413-001

LOCATION/PROJECT - DATE -

BORING SB-3 SAMPLE SHELBY DEPTH 10.5' BY -

DENSITY		MOISTURE ANALYSIS	MC	#10	#10	Extra
HEIGHT= 3.00	DIAMETER= 2.416	PAN	11.23	707	5.41	335F
NUMBER OF RINGS		WT. OF PAN & WET SOIL	251.6	146.89	188.65	
WT. OF RINGS & WET SOIL		WT. OF PAN & DRY SOIL	222.2	164.09	181.77	
WT. OF RINGS		WT. OF MOISTURE				
WT. OF WET SOIL	443.3	WT. OF PAN	113.6	106.98	43.57	
FIELD DENSITY		WT. OF DRY SOIL				
DRY DENSITY		MOISTURE CONTENT %				

WET SAMPLE	F			FIELD SAMPLE CONTAINER	
WT. OF WET SAMPLE & PAN	445.8				
WT. OF PAN	13.4				
WT. OF WET SOIL					
WT. OF SAMPLE/ OVEN DRIED					
				DRY SIEVE	WASH SIEVE

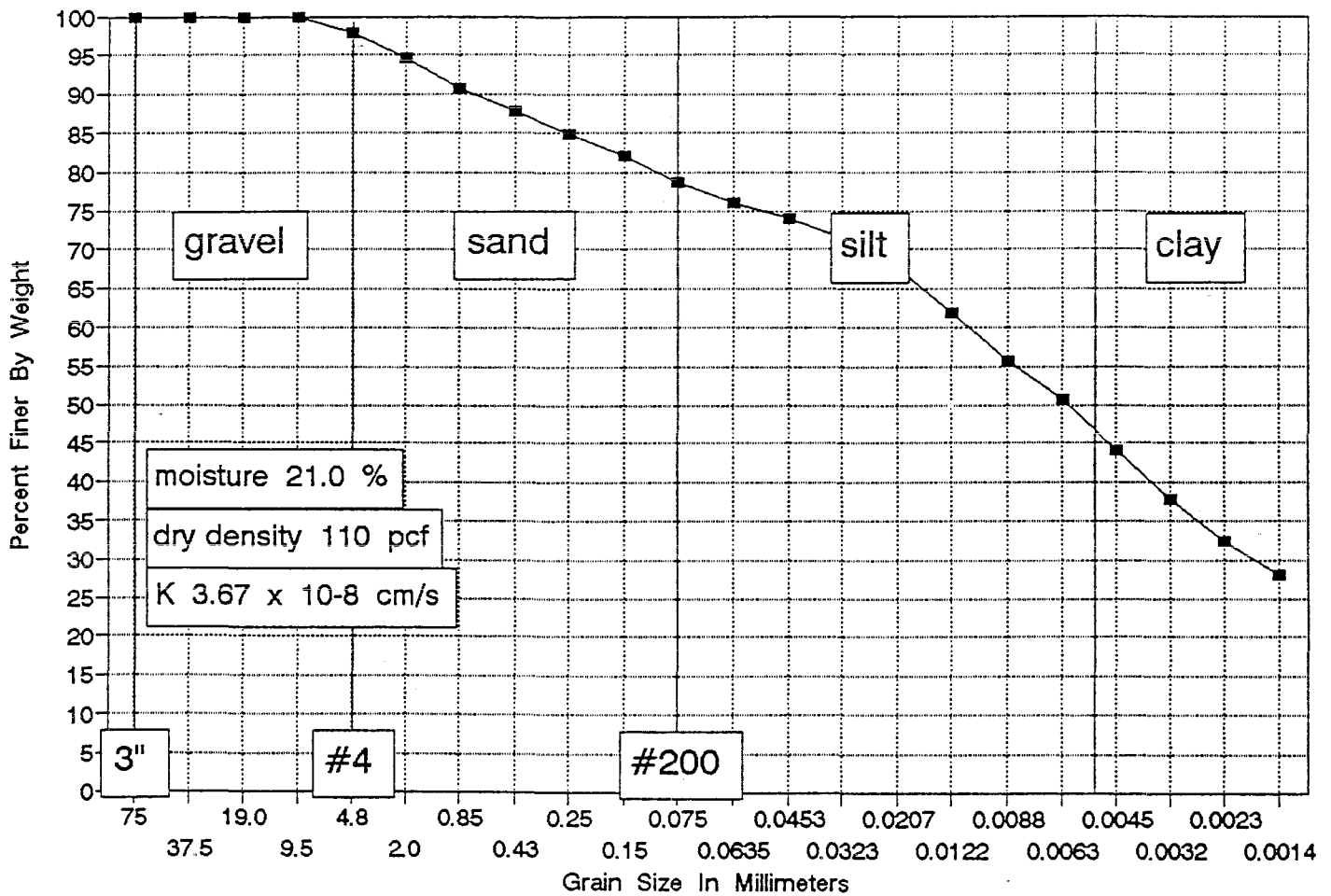
SAMPLE SPLIT	PAN NUMBER	PAN WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT		
						PARTIAL		TOTAL
						RETAINED	FINER	FINER
<input type="checkbox"/>								
<input type="checkbox"/>								
<input type="checkbox"/>			3"					
<input type="checkbox"/>			1-1/2"					
<input type="checkbox"/>			3/4"					
<input type="checkbox"/>			3/8"		0			
<input type="checkbox"/>			#4		2.58			
<input type="checkbox"/>			#10		11.27			
<input type="checkbox"/>	ST-39		#20		1.36			
<input type="checkbox"/>			#40		2.42			
<input type="checkbox"/>			#60		3.44			
<input type="checkbox"/>			#100		4.47			
<input type="checkbox"/>			#200		5.78			
<input type="checkbox"/>								
<input type="checkbox"/>								

NOTE: _____

661 Dames & Moore

GRADATION CURVE

Boring SB-27, sample at 27.5 feet



CP

field

Boring SB-27	Wt soil and dish	220.3
sample at 27.5 feet	Dry soil & dish	201.7
	dish	113.2
Moisture Content =	21.02 %	H 0
Wet Density =	ERR PCF	A 4.582
Dry Density =	ERR PCF	Ws 389.7

SIEVE & HYDROMETER ANALYSIS

SIEVE PORTION

Dry weight of TOTAL sample=	322.0
sample split -#10 sieve =	41.16

Sieve #	Weight Retained	Total Percent Finer
1.5 inch		100.00%
3/4 inch	0	100.00%
3/8 inch	0	100.00%
# 4	6.86	97.87%
# 10	16.89	94.76%
# 20	1.73	90.77%
# 40	3.02	87.80%
# 60	4.31	84.83%
# 100	5.52	82.05%
# 200	6.99	78.66%

Constants this test
Gs= 2.5 20c=.0143

When 5 grams of Sodium
Hexametaphosphate used correction
= 6

HYDROMETER ANALYSIS

Elapsed time	Tc	R'	Zr	Particle Dia. mm	Percent Partial	Total Percent Finer
0.5	19	39	9.87	0.0635	80.18	75.97
1	19	38.1	10.01	0.0453	77.99	73.90
2	19	37.1	10.18	0.0323	75.56	71.60
5	19	35.4	10.46	0.0207	71.43	67.68
15	19	32.9	10.87	0.0122	65.36	61.93
30	19	30.2	11.32	0.0088	58.80	55.71
60	19	28	11.68	0.0063	53.45	50.65
120	19	25.2	12.14	0.0045	46.65	44.20
250	19	22.4	12.60	0.0032	39.85	37.76
500	19	20.1	12.98	0.0023	34.26	32.46
1424	19	18.2	13.30	0.0014	29.64	28.09

HYDROMETER ANALYSIS

OWNER CP DATE 3/29/95
 BORING NO. SB-27 JOB NO. 30413-001
27.5'

SAMPLE SPECIMEN NO.

CLASSIFICATION

DISH NO. 420GRADUATE NO. 7HYDROMETER NO. 152HDISPERSING AGENT USED SODIUM HEXAMETA PHOSPHATE QUANTITY 5.00 GRAMSDISPERSING AGENT CORRECTION, C_D 5; MENISCUS CORRECTION, C_M 1

TIME	ELAPSED TIME	TEMP °C	HYDRO READING (R)	CORRECTED READING $R + C_M - C_D$	HEIGHT Z_R	PARTICLE DIA. (MM)	PERCENT FINER	
							PARTIAL	TOTAL
0737								
	.5	15	39					
	1	19	32'					
	2	19	37'					
	5	17	35 ⁴					
	15	17	32 ⁹					
	30	17	20 ²					
	60	19	28					
	120	19	25 ²					
	250	19	22 ⁴					
	500	19	20 ¹					
0721		19	18 ²					
WEIGHT IN GRAMS	DISH PLUS DRY SOIL					SPECIFIC GRAVITY OF SOLIDS,		
	DISH					$G_s =$		
	DRY SOIL				W_o	CORRECTED HYDROMETER READING (R)		

642.97 - 598.94 $= \text{HYDROMETER READING (R)} + C_M$

THE PARTICLE DIAMETER (D) IS CALCULATED FROM STOKES' EQUATION USING CORRECTED HYDROMETER READING. USE NOMOGRAPHIC CHART FOR SOLUTION OF STOKES' EQUATION.

HYDROMETER GRADUATED IN SPECIFIC GRAVITY

 W_s = TOTAL OVEN-DRY WT. OF SAMPLE USED FOR COMBINED ANALYSIS

$$\text{PARTIAL PERCENT FINER} = \frac{G}{G-1} \times \frac{100}{W_o} (R - C_D + M)$$

 W_o = OVEN-DRY WT. IN GRAMS OF SOIL USED FOR HYDROMETER ANALYSIS

HYDROMETER GRADUATED IN GRAMS PER LITER

 W_1 = OVEN-DRY WT OF SAMPLE RETAINED ON NO. 200 SIEVE

$$\text{PARTIAL PERCENT FINER} = \frac{100}{W_o} (R - C_D + M)$$

$$\text{TOTAL PERCENT FINER} = \text{PARTIAL PERCENT FINER} \times \frac{W_s - W_1}{W_s}$$

REMARKS

TECHNICIAN PSH

COMPUTED BY

CHECKED BY Ed

SA ☒ HA ☒ BLK SA ☐ -#200 ☐OWNER /CLIENT CP JOB NUMBER 30413-001LOCATION/PROJECT _____ DATE 3/29/95BORING SB-27 SAMPLE _____ DEPTH 27.5 BY EGL

DENSITY		MOISTURE ANALYSIS		+ #10	#10	EXTRA
HEIGHT=	DIAMETER=	PAN	<u>M-10</u>	<u>62</u>	<u>E10</u>	<u>428</u>
NUMBER OF RINGS		WT. OF PAN & WET SOIL	<u>220.3</u>	<u>190.69</u>	<u>185.91</u>	
WT. OF RINGS & WET SOIL		WT. OF PAN & DRY SOIL	<u>201.7</u>	<u>185.72</u>	<u>176.62</u>	
WT. OF RINGS		WT. OF MOISTURE				
WT. OF WET SOIL		WT. OF PAN	<u>113.2</u>	<u>110.57</u>	<u>43.44</u>	
FIELD DENSITY		WT. OF DRY SOIL				
DRY DENSITY		MOISTURE CONTENT %				

WET SAMPLE		FIELD SAMPLE CONTAINER	
WT. OF WET SAMPLE & PAN	<u>403.0</u>		
WT. OF PAN	<u>13.3</u>		
WT. OF WET SOIL			
WT. OF SAMPLE/ OVEN DRIED			

SAMPLE SPLIT	PAN NUMBER	PAN WEIGHT	SIEVE NUMBER	WEIGHT RETAINED	ACCUMULATIVE WEIGHT RETAINED	ACCUMULATIVE PERCENT		
						PARTIAL		TOTAL
						RETAINED	FINER	FINER
<input type="checkbox"/>								
<input type="checkbox"/>								
<input type="checkbox"/>			3"					
<input type="checkbox"/>			1-1/2"					
<input type="checkbox"/>			3/4"					
<input checked="" type="checkbox"/>			3/8"					
<input type="checkbox"/>			#4		<u>0</u>			
<input checked="" type="checkbox"/>			#4		<u>6.86</u>			
<input type="checkbox"/>	<u>ST-32</u>		#10		<u>16.89</u>			
<input type="checkbox"/>			#20		<u>1.73</u>			
<input type="checkbox"/>			#40		<u>3.02</u>			
<input type="checkbox"/>			#60		<u>4.31</u>			
<input type="checkbox"/>			#100		<u>5.52</u>			
<input type="checkbox"/>			#200		<u>6.99</u>			
<input type="checkbox"/>								
<input type="checkbox"/>								

NOTE: _____

EGL
Dames & Moore

SPECIFIC GRAVITY TEST

JOB NO. 30413-001 OWNER CP CRANE

TESTED BY RH DATE 4/9

DETERMINATION NO.	27-28 53-27	55-3	
FLASK NO.	7	8	
WT. FLASK + WATER + SOIL, W_1	699.32	697.89	
TEMPERATURE IN °C, T.	17.5°	20°	
WT. FLASK + WATER, W_2	683.42	687.70	
DISH NO.	A	E	
WT. DISH + DRY SOIL	569.82	568.04	
WT. DISH	545.05	545.05	
WT. SOIL, W_s	24.77	22.99	
SPECIFIC GRAVITY OF WATER AT T, G_T	1.0003	1.0000	
SPECIFIC GRAVITY OF SOIL, G_s	2.79	1.80	

REMARKS

$$G_s = \frac{G_T W_s}{W_s + W_2 - W_1}$$

PERMEABILITY TEST BY BACK PRESSURE
CONSTANT HEAD (Pbp)

Owner C. P. CLARE
Job # 30413-001
Location CHICAGO
Boring # 3-49
Sample # ST-1
Depth 2-10'

Deflecting Speed 0 in/Hr
Lateral Pressure 7 PSF
Saturated ☒ Field Moisture ☐ PSI

Set-Up 7/15/95 Tested _____ (____ Office)

Soil Type CL/ML w F-SHIVER LEAFES
SM

	Initial	Final
Weight soil & dish no. <u>M-113</u>	<u>221.0</u>	
Dry weight soil & dish	<u>208.7</u>	
Net loss of moisture		
Weight of dish only	<u>113.2</u>	
Net weight of dry soil		
Moisture, % of dry weight	<u>12.9</u>	<u>14.3</u>

Wt. solids + moisture	<u>W₀ 481.6</u>	<u>487.8</u> gms.
W ₀ ÷ 454	<u>W₀'</u>	lbs.
Weight solids	<u>W_s 426.6</u>	gms.
Wet density W ₀ ' ÷ V ₀ '	<u>133.3</u>	<u>140.6</u> pcf
Dry density	<u>118.1</u>	<u>123.0</u> pcf

$$K_{AV} = 9.01 \times 10^{-8} \text{ cm/s}$$

Net diameter	<u>D₀ 2.466</u>	in.
Area (0.785 D ₀ ²)	<u>A₀ 4.582</u>	<u>4.398</u> sq. in.
Height	<u>H₀ 3.00</u>	<u>3.002</u> in.
Volume (A ₀ H ₀) ÷ 1728	<u>V₀'</u>	cu. ft.
Volume (A ₀ H ₀) × 16.4	<u>V₀ 225.44</u>	<u>216.54</u> cc
Specific gravity of solids	<u>G_s</u>	
Volume of solids W _s ÷ G _s	<u>V_s</u>	cc
(V ₀ - V _s) ÷ V _s	<u>e_i</u>	
Initial burette reading		cc
Burette reading under pressure		cc
(V _p - V _s) ÷ V _s	<u>e_p</u>	

SATURATION DATA

PROJECT: C. D. CLARE NO.: 30413-001 LOCATION: CHICAGO
 Boring No.: B49 Sample: ST 4 Depth: 8-10' (ft./m.) Set up: 2 1/2' 7/15/95
 σ_3 = 7 psi = psf Type of Test: P31 Cell No.: Dial No.:

DATE	TIME		CHAMBER PRESSURE (PSI)	BACK PRESSURE (PSI)	EXTERNAL BURETTE OR DIAL RDG. (CC)/(IN.)	PORE PRESSURE (PSI)	Δ	B
	CLOSED	OPEN						
7/15/95	1150	1151	0/5	0 4/4 CLOSED	4.2 / 6.8	0.0 / 1.2	1.2/5	
	1204	1205	5/10	0 9/9 CLOSED	7.8 / 9.8	4.0 / 5.5	1.5/5	
	1227	1228	10/15	0 14/14 CLOSED	10.6 / 12.4	9.0 / 11.0	2.0/5	
	1244	1245	15/20	0 19/19 CLOSED	12.2 / 13.8	14.0 / 16.4	2.4/5	
	1311	1312	20/25	0 24/24 CLOSED	13.6 / 14.8	19.0 / 21.8	2.8/5	
	1342	1343	25/30	0 29/29 CLOSED	14.6 / 15.8	24.0 / 27.4	3.4/5	
	1421	1422	30/35	0 34/34 CLOSED	15.6 / 16.4	29.0 / 33.2	4.2/5	
	1440	1441	35/40	0 39/39 CLOSED	16.4 / 17.2	34.0 / 38.5	4.5/5	
	1502		40/45	0 CLOSED	17.2 / 17.8	39.0 / 42.0	4.9/5	
			45/46	CLOSED	17.8 / 18.0			
7/15/95	1503	0	46	0 39/39	18.0 /			
	0804				21.0 /			
	0825	0	46	0 39/36		31.2		
	0848					31.0		
	0927					30.8		
	1039					30.4		
	1114					30.2		
	1200	46				30.0		
	1249	49				29.6		
	1340	51				29.4		
	1419	39				29.2		
7/16	0730	1031				24.1		
	1041	191				23.3		

PERMEABILITY TEST BY BACK PRESSURE CONSTANT-HEAD

C. P. Clare
Chicago Il.

Boring SB-49 shelby tube # 4 at 8-10 feet

		Initial	Final
Wet Density	pcf	133.3	140.6
Dry density	pcf	118.1	123.0
% Moisture		12.9	14.3

Height Initial	3.000	221 Wet soil and dish
Diameter Initial	2.416	208.7 Dry soil and dish
Area Initial	4.582	113.2 dish only
Volume Initial	225.44	481.6 Ws Initial
Initial dial	0.260	487.8 Final Ws
Final dial	0.258	426.6 Weight solids
Initial cc/in res	4.2	
Final cc/in res.	21	

Height Final	3.002	7.625 cm
Diameter Final	2.367	
Area Final	4.398	28.398 cm ²
Volume Final	216.54	

Height change	0.002	
cc/in reser.	0.011	
Volume change	-16.8	
Cell Change	7.9 @ 46 psi	
Net Volume Change	-8.9	
h= T/B PRESS. diff	3	210.30 cm

Standard Water .005 N CaSO4

Hydraulic Gradient	Elapsed Time minutes	cc's	K cm/sec
27.58			
	51.0	0.20	7.77E-08
"B" final 0.98	39.0	0.20	1.02E-07
	1031.0	5.10	9.80E-08
	191.0	0.80	8.30E-08

+-----+ K Average = 9.01E-08 cm/s +-----+	
-----------------------------------------------------	--

**PERMEABILITY TEST BY BACK PRESSURE
CONSTANT HEAD (Pbp)**

Owner C.P. CLARE
 Job # 30413-001
 Location CHICAGO, IL
 Boring # SB-50
 Sample # ST 4
 Depth 8-10'

Deflecting Speed 7 in/Hr
 Lateral Pressure 7 PSF
 Saturated ☒ Field Moisture ☐
 Set-Up 7/15/95 Tested _____ (Office)
 Soil Type CL/ML

	Initial	Final
Weight soil & dish no. <u>E-20</u>	<u>244.7</u>	
Dry weight soil & dish	<u>201.4</u>	
Net loss of moisture		
Weight of dish only	<u>43.3</u>	
Net weight of dry soil		
Moisture, % of dry weight	<u>27.4</u>	<u>25.2</u>

Wt. solids + moisture	<u>W₀ 512.6</u>	<u>503.6</u> gms.
W ₀ ÷ 454	<u>W₀ ' _____</u>	lbs.
Weight solids	<u>W_s 402.4</u>	gms.
Wet density $W_0' \div V_0'$	<u>126.3</u>	<u>124.9</u> pcf
Dry density	<u>99.2</u>	<u>99.8</u> pcf

Net diameter	<u>D₀ 2.416</u>	in.
Area (0.785 D ₀ ²)	<u>A₀ 4.582</u>	<u>4.559</u> sq. in.
Height	<u>H₀ 3.37</u>	<u>3.366</u> in.
Volume (A ₀ H ₀) ÷ 1728	<u>V₀ ' _____</u>	cu. ft.
Volume (A ₀ H ₀) x 16.4	<u>V₀ 253.24</u>	<u>251.66</u> cc
Specific gravity of solids	<u>G_s _____</u>	
Volume of solids $W_s \div G_s$	<u>V_s _____</u>	cc
$(V_0 - V_s) \div V_s$	<u>e_i _____</u>	
Initial burette reading	<u>_____</u>	cc
Burette reading under pressure	<u>_____</u>	cc
$(V_p - V_s) \div V_s$	<u>e_p _____</u>	

$$K_{AV} = 1.62 \times 10^{-7} \text{ cm/s}$$

$\sigma_3 = \underline{7}$ psi = _____ psf Type of Test: PLP Call No.: _____ Dial No.: _____

[illegible]

PERMEABILITY TEST BY BACK PRESSURE CONSTANT-HEAD

C. P. Clare
Chicago Il.

Boring SB-50 shelby tube # 4 at 8-10 feet

		Initial	Final
Wet Density	pcf	126.3	124.9
Dry density	pcf	99.2	99.8
% Moisture		27.4	25.2

Height Initial	3.370	244.7	Wet soil and dish
Diameter Initial	2.416	201.4	Dry soil and dish
Area Initial	4.582	43.3	dish only
Volume Initial	253.24	512.6	Ws Initial
Initial dial	0.686	503.6	Final Ws
Final dial	0.69	402.4	Weight solids
Initial cc/in res	-0.462		
Final cc/in res.	-0.361		

Height Final	3.366	8.550	cm
Diameter Final	2.410		
Area Final	4.559	29.435	cm^2
Volume Final	251.66		

Height change	-0.004		
cc/in reser.	0.011		
Volume change	-9.18182		
Cell Change	7.6	@ 41	psi
Net Volume Change	-1.58182		
h= T/B PRESS. diff	3	210.30	cm

Standard Water .005 N CaSO4

Hydraulic Gradient	Elapsed Time	cc's	K
24.60	minutes		cm/sec
"B" final 0.98	24.0	0.20	1.79E-07
	37.0	0.30	1.74E-07
	1034.0	6.50	1.35E-07
	40.0	0.30	1.61E-07

+-----+-----+-----+	
	K Average = 1.62E-07 cm/s
+-----+-----+-----+	

SPECIFIC GRAVITY TEST

JOB NO. 30413-001-0504 OWNER C.P. Clark

TESTED BY RH DATE 7/17/93

DETERMINATION NO.	SE-4 8-10	SE-50 8-10	SE-50 2-4
FLASK NO.	5	7	11
WT. FLASK + WATER + SOIL, W_1	706.43	707.06	684.74
TEMPERATURE IN °C, T.	21°	21°	21.5°
WT. FLASK + WATER, W_2	680.80	683.00	660.68
DISH NO.	C-2	F	C-1
WT. DISH + DRY SOIL	581.38	577.03	574.21
WT. DISH	540.95	539.63	536.94
WT. SOIL, W_s	40.43	37.40	37.27
SPECIFIC GRAVITY OF WATER AT T, G_T	.9998	.9998	.9997
SPECIFIC GRAVITY OF SOIL, G_s	2.73	2.80	2.81

REMARKS see

$$G_s = \frac{G_T W_s}{W_s + W_2 - W_1}$$

SPECIFIC GRAVITY TEST

JOB NO. 30413-001 OWNER C.P. CLARKE

TESTED BY RJH DATE 7/17/93

DETERMINATION NO.	SB-49 4-6'	SB-47 4-6'	SB-48 6-8'
FLASK NO.	2	3	4
WT. FLASK + WATER + SOIL, W ₁	701.32	660.31	701.82
TEMPERATURE IN °C, T.	21°	21°	21°
WT. FLASK + WATER, W ₂	683.17	640.96	682.29
DISH NO.	C	Z	T
WT. DISH + DRY SOIL	800.39	451.90	249.73
WT. DISH	771.94	422.32	219.55
WT. SOIL, W _s	28.45	29.58	30.18
SPECIFIC GRAVITY OF WATER AT T, G _T	.9998	.9998	.9998
SPECIFIC GRAVITY OF SOIL, G _s	2.76	2.89	2.83

REMARKS

ELC

$$G_s = \frac{G_T W_s}{W_s + W_2 - W_1}$$

MOISTURE AND DENSITY DETERMINATIONS

DAMES & MOORE

CLIENT

C.P. CLARKE

JOB NO.

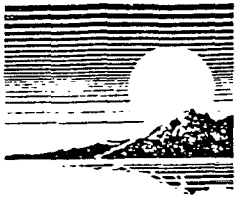
30413-001

LOCATION

PAGE OF

SAMPLE & SOIL TYPE	BORING	SB-49	SB-47	SB-48	SB-50				
	SAMPLE NO.								
	SAMPLE DEPTH	4-6'	4-6'	6-8	2-4				
	DATE SAMPLED BY								
	DATE TESTED BY	RJH 7/17/95							
	SOIL TYPE								
	LABORATORY IDENTIFICATION								
DENSITY	NO. OF RINGS	H= 3.93" D= 2.92"	4.02 2.92"	3.87 2.92	4.12 2.92				
	WT. OF WET SOIL & RINGS	1131.6	1150.3	1102.2	1202.0				
	WT. OF RINGS TUBE	304.2	289.6	280.2	320.4				
	WT. OF WET SOIL								
	WET DENSITY (LBS./CU.FT.)	128.4	130.5	129.5	130.5				
	DRY DENSITY (LBS./CU.FT.)	102	104	102	104				
MOISTURE CONTENT	DISH NO.	ST-22	700	95	301				
	WT. OF WET SOIL & DISH	325.9	417.4	360.2	392.9				
	WT. OF DRY SOIL & DISH	282.5	354.3	307.3	334.3				
	NET LOSS OF MOISTURE								
	WT. OF DISH	112.1	103.5	100.4	114.9				
	WT. OF DRY SOIL								
	MOISTURE CONTENT (% DRY WT.)	25.5	25.2	26.6	25.6				

7/21



**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

21 July 1995

Ms. Gail Artrip
DAMES & MOORE
1701 Golf Road Suite 1000
Rolling Meadows, IL 60008

Dear Ms. Artrip:

Enclosed are the analytical results in support of the project identified as "CP Clare / 30413-001". Samples were received by First Environmental Laboratories on July 11, 1995. Analysis performed was TOC as instructed on the enclosed chain of custody record.

Project Summary

Analyses were performed using guidelines established by methods from SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," 3rd Edition, July 1992. The specific method references are included in the actual report.

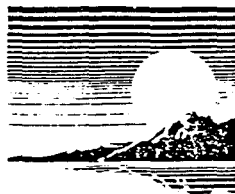
These samples were subcontracted to a laboratory approved by First Environmental Laboratories, Inc. Results for soil analysis are reported on a wet weight basis. The percent total solids for each sample has been listed for reference purposes.

Samples SB-50 (6'-8') and SB-48 (4'-6') have "greater than" reporting limits. The instrument used to perform the analysis uses a "boat" sample introduction device. Even though the smallest sample weight measurable was used to perform the analysis the instruments capacity was exceeded.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at 708-778-1200.

Sincerely,

Lorrie Franklin
Project Manager



**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

Analytical Report

Client: DAMES & MOORE
Project ID: C.P. Clare - 30413-001

Date Received: 07/12/95
Date Taken: 07/11/95
Date Reported: 07/21/95

TOC Method 9060

Date Analyzed 07/20/95

<u>Sample #</u>	<u>Description</u>	<u>TOC</u> mg/kg	<u>Total Solids</u> %
18742	SB-47 (2'-4')	14,500	82.22
18743	SB-47 (8'-10')	41,400	77.97
18744	SB-50 (6'-8')	>60,000	78.16
18745	SB-48 (4'-6')	>60,000	79.54
18746	SB-49 (2'-4')	24,100	81.23
18747	SB-49 (6'-8')	38,700	81.32

Appendix D Tier 2 Soil Remediation Objectives Spreadsheets

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS RESIDENTIAL
LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 6/20/00

Contaminant of concern = vinyl chloride
Site Scenario = RESIDENTIAL

CALCULATED SSL (mg/kg)= 0.477928647

Calculated Csat (mg/kg) = 925.8717974

Where:

TR = 1.00E-06 (default)
ATc (yr)= 70 (default)
URF = 8.40E-05 (toxicological specific value, in m3/ug)
EF (d/yr)= 350 (default by site scenario)
ED (yr)= 30 (default by site scenario)
VF = 16498.35879 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF)

Q/C = 68.81 (default by site scenario, in (g/m2s)/(kg/m3))
T (s) = 950000000 (default by site scenario)
Da = 4.65138E-05 (calculated, in cm2/s)
Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoi)
Di = 0.106 (chemical specific in cm2/s)
n = 0.422145329 (calculated in Lpore/Lsoil)
w = 0.252 (site specific in g/g)
Dry soil bulk density = 1.67 (site specific in g/cm3)
Soil particle density = 2.89 (site specific in g/cm3)
H' = 1.11 (chemical specific)
Kd = 0.2697 (calculated in cm3/g)
Koc = 18.6 (chemical specific in cm3/g)
foc = 0.0145 (site specific in g/g)
S = 1760 (chemical specific in mg/L)
Water-filled soil por. = 0.367765767 (calculated in Lwater/Ls)
Dw = 1.23E-06 (chemical specific in cm2/s)
I = 0.3 (default)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/
1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS RESIDENTIAL
LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 6/20/00

Contaminant of concern = trichloroethene
Site Scenario = RESIDENTIAL

CALCULATED SSL (mg/kg)= 90.49779267

Calculated Csat (mg/kg) = 2905.056489

Where:

TR = 1.00E-06 (default)
ATc (yr)= 70 (default)
URF = 1.74E-06 (toxicological specific value, in m3/ug)
EF (d/yr)= 350 (default by site scenario)
ED (yr)= 30 (default by site scenario)
VF = 64712.12024 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF)

Q/C = 68.81 (default by site scenario, in (g/m2s)/(kg/m3))
T (s) = 950000000 (default by site scenario)
Da = 3.02338E-06 (calculated, in cm2/s)
Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoi)
Di = 0.079 (chemical specific in cm2/s)
n = 0.422145329 (calculated in Lpore/Lsoil)
w = 0.252 (site specific in g/g)
Dry soil bulk density = 1.67 (site specific in g/cm3)
Soil particle density = 2.89 (site specific in g/cm3)
H' = 0.422 (chemical specific)
Kd = 2.407 (calculated in cm3/g)
Koc = 166 (chemical specific in cm3/g)
foc = 0.0145 (site specific in g/g)
S = 1100 (chemical specific in mg/L)
Water-filled soil por. = 0.367765767 (calculated in Lwater/Ls)
Dw = 9.10E-06 (chemical specific in cm2/s)
I = 0.3 (default)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/
1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS RESIDENTIAL
LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 6/20/00

Contaminant of concern = tetrachloroethene
Site Scenario = RESIDENTIAL

CALCULATED SSL (mg/kg)= 213.3033336

Calculated Csat (mg/kg) = 498.4542463

Where:

TR = 1.00E-06 (default)
ATc (yr)= 70 (default)
URF = 5.80E-07 (toxicological specific value, in m3/ug)
EF (d/yr)= 350 (default by site scenario)
ED (yr)= 30 (default by site scenario)
VF = 50842.16445 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF)

Q/C = 68.81 (default by site scenario, in (g/m2s)/(kg/m3))
T (s) = 950000000 (default by site scenario)
Da = 4.89796E-06 (calculated, in cm2/s)
Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoi)
Di = 0.072 (chemical specific in cm2/s)
n = 0.422145329 (calculated in Lpore/Lsoil)
w = 0.252 (site specific in g/g)
Dry soil bulk density = 1.67 (site specific in g/cm3)
Soil particle density = 2.89 (site specific in g/cm3)
H' = 0.754 (chemical specific)
Kd = 2.2475 (calculated in cm3/g)
Koc = 155 (chemical specific in cm3/g)
foc = 0.0145 (site specific in g/g)
S = 200 (chemical specific in mg/L)
Water-filled soil por. = 0.367765767 (calculated in Lwater/Ls)
Dw = 8.20E-06 (chemical specific in cm2/s)
I = 0.3 (default)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/
1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS INDUSTRIAL/COMMERCIAL

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 5/23/01

Contaminant of concern = vinyl chloride
Site Scenario = INDUSTRIAL/COMMERCIAL

CALCULATED SSL (mg/kg)= 0.889

Calculated Csat (mg/kg) = 925.872

Where:

TR = 1.00E-06 (default)
ATc (yr)= 70 (default)
URF = 8.40E-05 (toxicological specific value, in m3/ug)
EF (d/yr)= 250 (default by site scenario)
ED (yr)= 25 (default by site scenario)
VF = 18271.97115 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF)

Q/C = 85.81 (default by site scenario, in (g/m2s)/(kg/m3))
T (s) = 790000000 (default by site scenario)
Da = 4.90421E-05 (calculated, in cm2/s)
Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoi)
Di = 0.106 (chemical specific in cm2/s)
n = 0.422145329 (calculated in Lpore/Lsoil)
w = 0.252 (site specific in g/g)
Dry soil bulk density = 1.67 (site specific in g/cm3)
Soil particle density = 2.89 (site specific in g/cm3)
H' = 1.11 (chemical specific)
Kd = 0.2697 (calculated in cm3/g)
Koc = 18.6 (chemical specific in cm3/g)
foc = 0.0145 (site specific in g/g)
S = 1760 (chemical specific in mg/L)
Water-filled soil por. = 0.367765767 (calculated in Lwater/Ls)
Dw = 1.23E-05 (chemical specific in cm2/s)
I = 0.3 (default)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/
1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS INDUSTRIAL/COMMERCIAL

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 5/23/01

Contaminant of concern = trichloroethene
Site Scenario = INDUSTRIAL/COMMERCIAL

CALCULATED SSL (mg/kg)= 172.896

Calculated Csat (mg/kg) = 2905.056

Where:

TR = 1.00E-06 (default)
ATc (yr)= 70 (default)
URF = 1.74E-06 (toxicological specific value, in m3/ug)
EF (d/yr)= 250 (default by site scenario)
ED (yr)= 25 (default by site scenario)
VF = 73590.83259 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF)

Q/C = 85.81 (default by site scenario, in (g/m2s)/(kg/m3))
T (s) = 790000000 (default by site scenario)
Da = 3.02338E-06 (calculated, in cm2/s)
Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoi)
Di = 0.079 (chemical specific in cm2/s)
n = 0.422145329 (calculated in Lpore/Lsoil)
w = 0.252 (site specific in g/g)
Dry soil bulk density = 1.67 (site specific in g/cm3)
Soil particle density = 2.89 (site specific in g/cm3)
H' = 0.422 (chemical specific)
Kd = 2.407 (calculated in cm3/g)
Koc = 166 (chemical specific in cm3/g)
foc = 0.0145 (site specific in g/g)
S = 1100 (chemical specific in mg/L)
Water-filled soil por. = 0.367765767 (calculated in Lwater/Ls)
Dw = 9.10E-06 (chemical specific in cm2/s)
I = 0.3 (default)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/
1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS INDUSTRIAL/COMMERCIAL

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 5/23/01

Contaminant of concern = tetrachloroethene
Site Scenario = INDUSTRIAL/COMMERCIAL

CALCULATED SSL (mg/kg)= 407.516

Calculated Csat (mg/kg) = 498.454

Where:

TR = 1.00E-06 (default)
ATc (yr)= 70 (default)
URF = 5.80E-07 (toxicological specific value, in m3/ug)
EF (d/yr)= 250 (default by site scenario)
ED (yr)= 25 (default by site scenario)
VF = 57817.87397 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF)

Q/C = 85.81 (default by site scenario, in (g/m2s)/(kg/m3))
T (s) = 790000000 (default by site scenario)
Da = 4.89796E-06 (calculated, in cm2/s)
Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoi)
Di = 0.072 (chemical specific in cm2/s)
n = 0.422145329 (calculated in Lpore/Lsoil)
w = 0.252 (site specific in g/g)
Dry soil bulk density = 1.67 (site specific in g/cm3)
Soil particle density = 2.89 (site specific in g/cm3)
H' = 0.754 (chemical specific)
Kd = 2.2475 (calculated in cm3/g)
Koc = 155 (chemical specific in cm3/g)
foc = 0.0145 (site specific in g/g)
S = 200 (chemical specific in mg/L)
Water-filled soil por. = 0.367765767 (calculated in Lwater/Ls)
Dw = 8.20E-06 (chemical specific in cm2/s)
I = 0.3 (default)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/
1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS BY CONSTRUCTION WORKER

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas

Date = 5/23/01

Contaminant of concern = vinyl chloride

Site Scenario = CONSTRUCTION WORKER

CALCULATED SSL (mg/kg)= 1.284

Calculated Csat (mg/kg) = 925.872

Where:

TR = 1.00E-06 (default)
 ATc (yr)= 70 (default)
 URF = 8.40E-05 (toxicological specific value, in m3/ug)
 EF (d/yr)= 30 (default by site scenario)
 ED (yr)= 1 (default by site scenario)
 VF' = 126.6533075 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF')

Q/C = 85.81 (default by site scenario, in (g/m2s)/(kg/m3))
 T (s) = 3600000 (default by site scenario)
 Da = 4.65138E-05 (calculated, in cm2/s)
 Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoil)
 Di = 0.106 (chemical specific in cm2/s)
 n = 0.422145329 (calculated in Lpore/Lsoil)
 w = 0.252 (site specific in g/g)
 Dry soil bulk density = 1.67 (site specific in g/cm3)
 Soil particle density = 2.89 (site specific in g/cm3)
 H' = 1.11 (chemical specific)
 Kd = 0.2677 (calculated in cm3/g)
 Koc = 18.6 (chemical specific in cm3/g)
 foc = 0.0145 (site specific in g/g)
 S = 1760 (chemical specific in mg/L)
 Water-filled soil por. = 0.367765767 (calculated in Lwater/Lsoil)
 Dw = 1.23E-06 (chemical specific in cm2/s)
 I = 0.3 (default)
 Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
 1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS BY CONSTRUCTION WORKER

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas

Date = 5/23/01

Contaminant of concern = trichloroethene

Site Scenario = CONSTRUCTION WORKER

CALCULATED SSL (mg/kg) = 243.154

Calculated Csat (mg/kg) = 2905.056

Where:

TR = 1.00E-06 (default)
 ATc (yr) = 70 (default)
 URF = 1.74E-06 (toxicological specific value, in m3/ug)
 EF (d/yr) = 30 (default by site scenario)
 ED (yr) = 1 (default by site scenario)
 VF' = 496.7769322 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF')

Q/C = 85.81 (default by site scenario, in (g/m2s)/(kg/m3))
 T (s) = 3600000 (default by site scenario)
 Da = 3.02338E-06 (calculated, in cm2/s)
 Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoil)
 Di = 0.079 (chemical specific in cm2/s)
 n = 0.422145329 (calculated in Lpore/Lsoil)
 w = 0.252 (site specific in g/g)
 Dry soil bulk density = 1.67 (site specific in g/cm3)
 Soil particle density = 2.89 (site specific in g/cm3)
 H' = 0.422 (chemical specific)
 Kd = 2.407 (calculated in cm3/g)
 Koc = 166 (chemical specific in cm3/g)
 foc = 0.0145 (site specific in g/g)
 S = 1100 (chemical specific in mg/L)
 Water-filled soil por. = 0.367765767 (calculated in Lwater/Lsoil)
 Dw = 9.10E-06 (chemical specific in cm2/s)
 I = 0.3 (default)
 Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
 1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

SSL for INHALATION OF CARCINOGENIC CONTAMINANTS BY CONSTRUCTION WORKER

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas

Date = 5/23/01

Contaminant of concern = tetrachloroethene

Site Scenario = CONSTRUCTION WORKER

CALCULATED SSL (mg/kg)= 573.115

Calculated Csat (mg/kg) = 498.454

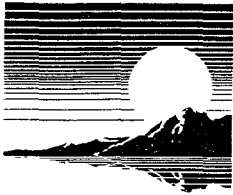
Where:

TR = 1.00E-06 (default)
 ATc (yr)= 70 (default)
 URF = 5.80E-07 (toxicological specific value, in m3/ug)
 EF (d/yr)= 30 (default by site scenario)
 ED (yr)= 1 (default by site scenario)
 VF' = 390.3011428 (calculated--see parameters below, in m3/kg)

Derivation of Volatilization Factor (VF')

Q/C = 85.81 (default by site scenario, in (g/m2s)/(kg/m3))
 T (s) = 3600000 (default by site scenario)
 Da = 4.89796E-06 (calculated, in cm2/s)
 Air-filled soil porosity = 0.054379562 (calculated in Lair/Lsoil)
 Di = 0.072 (chemical specific in cm2/s)
 n = 0.422145329 (calculated in Lpore/Lsoil)
 w = 0.252 (site specific in g/g)
 Dry soil bulk density = 1.67 (site specific in g/cm3)
 Soil particle density = 2.89 (site specific in g/cm3)
 H' = 0.754 (chemical specific)
 Kd = 2.2475 (calculated in cm3/g)
 Koc = 155 (chemical specific in cm3/g)
 foc = 0.0145 (site specific in g/g)
 S = 200 (chemical specific in mg/L)
 Water-filled soil por. = 0.367765767 (calculated in Lwater/Lsoil)
 Dw = 8.20E-06 (chemical specific in cm2/s)
 I = 0.3 (default)
 Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
 1/(2b+3)= 0.042 (default by soil type, APPENDIX C TABLE K)

Appendix E Phase II Investigation Laboratory Analytical Reports



**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

5 September 1996

Ms. Gail Artrip
DAMES & MOORE
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Dear Ms. Artrip:

Enclosed are the analytical results for your project "CP Clare." Samples were received by First Environmental Laboratories on August 30, 1996. Samples were analyzed for volatiles as instructed on the enclosed chain of custody records.

PROJECT SUMMARY

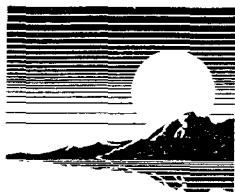
All analyses were performed in accordance with the EPA publication: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd Edition, July 1992. The specific method references appear on the analytical reports.

Analyses were performed within established holding times. QA/QC documentation and raw data will remain on file for future reference. The results have been expressed on a dry weight basis per method protocols.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at 630-778-1200.

Sincerely,

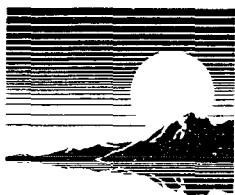
Lorrie Franklin
Project Manager



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

Project I.D.: C.P. Clare Job #30413-005		
Dames & Moore Sample ID:	PG-2	
Depth:	3.5-4.5'	
First Environmental Lab Sample ID:	22977	
Date Taken:	1/19/96	
Date Received:	1/22/96	
Parameters	Detection Limits	Results ug/kg
Volatile Compounds - Method 8240A		
Date of Analysis:		1/23/96
Matrix		
Dilution Factor	1	10
Acetone	10.0	< 100
Benzene	5.0	123
Bromodichloromethane	5.0	< 50.0
Bromoform	5.0	< 50.0
Bromomethane	10.0	< 100
2-Butanone	10.0	< 100
Carbon disulfide	5.0	< 50.0
Carbon tetrachloride	5.0	< 50.0
Chlorobenzene	5.0	< 50.0
Chlorodibromomethane	5.0	< 50.0
Chloroethane	10.0	< 100
Chloroform	5.0	< 50.0
Chloromethane	10.0	< 100
1,1-Dichloroethane	5.0	< 50.0
1,2-Dichloroethane	5.0	< 50.0
1,1-Dichloroethene	5.0	< 50.0
1,2-Dichloroethene (total)	5.0	< 50.0
1,2-Dichloropropane	5.0	< 50.0
cis-1,3-Dichloropropene	5.0	< 50.0
trans-1,3-Dichloropropene	5.0	< 50.0
Ethyl benzene	5.0	< 50.0
2-Hexanone	10.0	< 100
4-Methyl-2-pentanone	10.0	< 100
Methylene chloride	5.0	< 50.0
Styrene	5.0	< 50.0
1,1,2,2-Tetrachloroethane	5.0	< 50.0
Tetrachloroethene	5.0	< 50.0
Toluene	5.0	2,440
1,1,1-Trichloroethane	5.0	< 50.0
1,1,2-Trichloroethane	5.0	< 50.0
Trichloroethene	5.0	< 50.0
Vinyl Acetate	10.0	< 100
Vinyl Chloride	10.0	49,500
Xylenes (total)	5.0	221



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

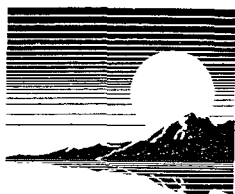
Project I.D.: C.P. Clare - Job #30413-005			
Dames & Moore Sample ID:		PG-2	
Depth:		3.5-4.5'	
First Environmental Lab Sample ID:		22977	
Date Taken:		1/19/96	
Date Received:		1/22/96	
Matrix:		Soil	
Parameters	Method	Detection Limits	Results mg/kg
Chromium	6010A	0.1	22.2
Lead	6010A	0.1	15.3
Mercury	7470	0.05	< 0.05
			Results
			%
Solids, Total			79.86



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

Project I.D.:						
Dames & Moore Sample ID:	PG1	PG1	PG2	PG2	PG3	
Depth:	8-10'	18-20'	10-12'	14-16'	10-12'	
First Environmental Lab Sample ID:	23140	23141	23142	23143	23144	
Date Taken:	1/26/96	1/26/96	1/26/96	1/26/96	1/26/96	
Date Received:	1/29/96	1/29/96	1/29/96	1/29/96	1/29/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8240A						
Date of Analysis:		2/2/96	2/2/96	2/2/96	2/2/96	2/1/96
Matrix		Soil	Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	1	50
Acetone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
Benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
2-Butanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
Carbon disulfide	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
Chloroform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
1,1-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
1,2-Dichloroethene (total)	5.0	1,050	< 5.0	12.6	< 5.0	1,510
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Tetrachloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	200
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0
Trichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	55,400
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 100
Vinyl Chloride	10.0	1,070	< 10.0	694	< 10.0	< 100
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 50.0



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

Project I.D.: CP Clare #30413-005						
Dames & Moore Sample ID:	PG3	PG3	PG4	PG5	PG5	
Depth:	14-16'	23-25'	14-16'	10-12'	18-20'	
First Environmental Lab Sample ID:	23145	23146	23147	23148	23149	
Date Taken:	1/26/96	1/26/96	1/26/96	1/26/96	1/26/96	
Date Received:	1/29/96	1/29/96	1/29/96	1/29/96	1/29/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8240A						
Date of Analysis:		2/1/96	2/2/96	2/2/96	2/2/96	2/2/96
Matrix		Soil	Soil	Soil	Soil	Soil
Dilution Factor	1	50	1	1	1	1
Acetone	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
Benzene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloromethane	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethene (total)	5.0	1,280	< 5.0	< 5.0	1,060	< 5.0
1,2-Dichloropropane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	39,100	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Acetate	10.0	< 100	< 10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 100	< 10.0	< 10.0	297	< 10.0
Xylenes (total)	5.0	< 50.0	< 5.0	< 5.0	< 5.0	< 5.0



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

Project I.D.: CP Clare #30413-005

Dames & Moore Sample ID:			PG1	PG1	PG2	PG2	PG3	PG3
Depth:			8-10'	18-20'	10-12'	14-16'	10-12'	14-16'
First Environmental Lab Sample ID:			23140	23141	23142	23143	23144	23145
Date Taken:			1/26/96	1/26/96	1/26/96	1/26/96	1/26/96	1/26/96
Date Received:			1/29/96	1/29/96	1/29/96	1/29/96	1/29/96	1/29/96
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil
Parameters	Method	Detection Limits	Results mg/kg	Results mg/kg	Results mg/kg	Results mg/kg	Results mg/kg	Results mg/kg
Chromium	6010A	0.1	21.2	17.5	18.9	20.6	22.1	21.6
Lead	6010A	0.1	15.5	15.2	15.8	14.0	15.2	15.7
Mercury	7470	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Project I.D.: CP Clare #30413-005

Dames & Moore Sample ID:			PG3	PG4	PG5	PG5
Depth:			23-25'	14-16'	10-12'	18-20'
First Environmental Lab Sample ID:			23146	23147	23148	23149
Date Taken:			1/26/96	1/26/96	1/26/96	1/26/96
Date Received:			1/29/96	1/29/96	1/29/96	1/29/96
Matrix:			Soil	Soil	Soil	Soil
Parameters	Method	Detection Limits	Results mg/kg	Results mg/kg	Results mg/kg	Results mg/kg
Chromium	6010A	0.1	22.2	19.4	18.6	15.4
Lead	6010A	0.1	14.2	14.0	14.7	14.3
Mercury	7470	0.05	< 0.05	< 0.05	< 0.05	< 0.05



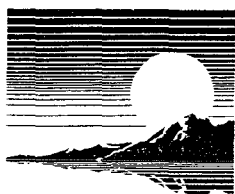
**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

DAMES & MOORE

Project I.D.:CP Clare 30413-005

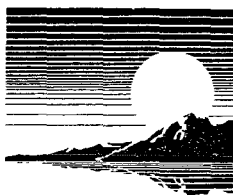
Sample #	D&M Sample ID	% Total Solids
23140	PG1 8-10'	80.78
23141	PG1 18-20'	80.21
23142	PG2 10-12'	82.82
23143	PG2 14-16'	78.51
23144	PG3 10-12'	80.02
23145	PG3 14-16'	79.44
23146	PG3 23-25'	76.37
23147	PG4 14-16'	82.60
23148	PG5 10-12'	82.19
23149	PG5 18-20'	80.13



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

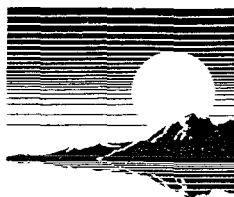
Project I.D.: CP Clare #30413-005						
Dames & Moore Sample ID:	PG6	PG6	PG7	PG7	PG8	
Depth:	9-11'	13-15'	7-9'	13-15'	11-13'	
First Environmental Lab Sample ID:	23107	23108	23109	23110	23111	
Date Taken:	1/25/96	1/25/96	1/25/96	1/25/96	1/25/96	
Date Received:	1/26/96	1/26/96	1/26/96	1/26/96	1/26/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8240A						
Date of Analysis:		2/1/96	2/1/96	2/1/96	2/1/96	2/1/96
Matrix		Soil	Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	1	1
Acetone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethene (total)	5.0	< 5.0	62.2	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 10.0	75.5	< 10.0	< 10.0	< 10.0
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

Project I.D.: CP Clare #30413-005				
Dames & Moore Sample ID:	PG8	PG9	PG9	
Depth:	18-20'	11-13'	23-25'	
First Environmental Lab Sample ID:	23112	23113	23114	
Date Taken:	1/25/96	1/25/96	1/25/96	
Date Received:	1/26/96	1/26/96	1/26/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8240A				
Date of Analysis:		2/1/96	2/1/96	2/1/96
Matrix		Soil	Soil	Soil
Dilution Factor	1	1	1	1
Acetone	10.0	< 10.0	< 10.0	< 10.0
Benzene	5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0	< 5.0
Chloromethane	10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethene (total)	5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	< 5.0	< 5.0	< 5.0
Toluene	5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	< 5.0	< 5.0	< 5.0
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 10.0	< 10.0	< 10.0
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0



First Environmental Laboratories, Inc.

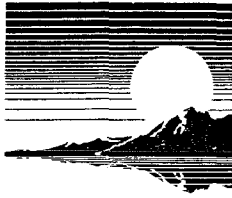
1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

Project I.D.: CP Clare #30413-005

Dames & Moore Sample ID:			PG6	PG6	PG7	PG7	PG8	PG8
Depth:			9-11'	13-15'	7-9'	13-15'	11-13'	18-20'
First Environmental Lab Sample ID:			23107	23108	23109	23110	23111	23112
Date Taken:			1/25/96	1/25/96	1/25/96	1/25/96	1/25/96	1/25/96
Date Received:			1/26/96	1/26/96	1/26/96	1/26/96	1/26/96	1/26/96
Matrix:			Soil	Soil	Soil	Soil	Soil	Soil
Parameters	Method	Detection Limits	Results mg/kg	Results mg/kg	Results mg/kg	Results mg/kg	Results mg/kg	Results mg/kg
Chromium	6010A	0.1	20.7	19.9	18.5	18.6	19.1	17.6
Lead	6010A	0.1	15.3	13.4	14.7	13.6	14.4	12.9
Mercury	7470	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Project I.D.: CP Clare #30413-005

Dames & Moore Sample ID:			PG9	PG9
Depth:			11-13'	23-25'
First Environmental Lab Sample ID:			23113	23114
Date Taken:			1/25/96	1/25/96
Date Received:			1/26/96	1/26/96
Matrix:			Soil	Soil
Parameters	Method	Detection Limits	Results mg/kg	Results mg/kg
Chromium	6010A	0.1	18.6	9.6
Lead	6010A	0.1	13.7	7.7
Mercury	7470	0.05	< 0.05	< 0.05



**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233

DAMES & MOORE

Project I.D.:CP Clare 30413-005

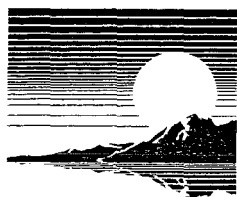
Sample #	D&M Sample ID	% Total Solids
23107	PG6 9-11'	80.18
23108	PG6 13'15'	83.14
23109	PG7 7-9'	82.66
23110	PG7 13-15'	81.18
23111	PG8 11-13'	79.42
23112	PG8 18-20'	80.21
23113	PG9 11-13'	79.07
23114	PG9 23-25'	87.04



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

Project I.D.: C.P. Clare (Kedzie & Pratt)					
Dames & Moore Sample ID:	PG-11	PG-11	PG-10	PG-13	
Depth:	3-5'	9-11'	9-11'	9-11'	
First Environmental Lab Sample ID:	29240	29241	29242	29350	
Date Taken:	08/21/96	08/21/96	08/21/96	08/21/96	
Date Logged In:	08/26/96	08/26/96	08/26/96	08/28/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8260A					
Date of Analysis:		08/28/96	08/28/96	08/28/96	08/28/96
Matrix		Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	20
Acetone	10.0	< 10.0	< 10.0	< 10.0	< 200
Benzene	5.0	6.8	5.2	< 5.0	< 100
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 100
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 100
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 200
2-Butanone	10.0	< 10.0	< 10.0	< 10.0	< 200
Carbon disulfide	5.0	5.3	< 5.0	< 5.0	< 100
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 100
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 100
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 100
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 200
Chloroform	5.0	< 5.0	< 5.0	< 5.0	< 100
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 200
1,1-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 100
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 100
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 100
cis-1,2-Dichloroethene	5.0	232	32.5	20.4	1,650
trans-1,2-Dichloroethene	5.0	30.2	8.6	< 5.0	108
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 100
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 100
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 100
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 100
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 200
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 200
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 100
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 100
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 100
Tetrachloroethene	5.0	< 5.0	< 5.0	< 5.0	41,400
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 100
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 100
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 100
Trichloroethene	5.0	< 5.0	7.5	< 5.0	7,380
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 200
Vinyl Chloride	10.0	141	59.3	< 10.0	< 200
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 100



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

Project I.D.: C.P. Clare (Kedzie & Pratt)						
Dames & Moore Sample ID:	PG-13	PG-13	PG-13	PG-12	PG-12	
Depth:	3-5	11-13	13-15	9-11	11-13	
First Environmental Lab Sample ID:	29172	29173	29174	29175	29176	
Date Taken:	8/21/96	8/21/96	8/21/96	8/21/96	8/21/96	
Date Received:	8/22/96	8/22/96	8/22/96	8/22/96	8/22/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8260A						
Date of Analysis:		8/24/96	8/24/96	8/24/96	8/24/96	8/24/96
Matrix		Soil	Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	1	1
Acetone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 5.0	< 5.0	< 5.0	9.9	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,2-Dichloroethene	5.0	4,230	< 5.0	< 5.0	25.7	29.4
trans-1,2-Dichloroethene	5.0	355	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	24,600	< 5.0	47.6	< 5.0	< 5.0
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	3,960	< 5.0	8.0	3,820	281
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

Project I.D.: C.P. Clare (Kedzie & Pratt)

Dames & Moore Sample ID:	PG-11	PG-11	PG-10	PG-10
Depth:	1-3	7-9	1-3	3-5
First Environmental Lab Sample ID:	29177	29178	29179	29180
Date Taken:	8/21/96	8/21/96	8/21/96	8/21/96
Date Received:	8/22/96	8/22/96	8/22/96	8/22/96

Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg
------------	------------------	---------------	---------------	---------------	---------------

Volatile Compounds - Method 8260A

Date of Analysis:		8/24/96	8/24/96	8/24/96	8/24/96
Matrix		Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	1
Acetone	10.0	100	< 10.0	< 10.0	< 10.0
Benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	17.4	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	5.8	5.1	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0	< 5.0	17.5
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 5.0	< 5.0	48.2	24.1
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,2-Dichloroethene	5.0	18.6	< 5.0	< 5.0	< 5.0
trans-1,2-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	< 5.0	< 5.0	< 5.0	28.8
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	31.2	13.3
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	8.4	< 5.0	< 5.0	11.6
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	6.3 J	18.0	< 10.0	< 10.0
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 5.0



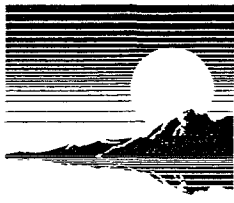
**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

DAMES & MOORE

Project I.D.: CP Clare (Kedzie & Pratt)

Sample #	Description	% Total Solids
29172	PG-13 3-5	81.09
29173	PG-13 11-13	81.27
29174	PG-13 13-15	79.59
29175	PG-12 9-11	80.20
29176	PG-12 11-13	79.88
29177	PG-11 1-3	77.73
29178	PG-11 7-9	86.52
29179	PG-10 1-3	84.29
29180	PG-10 3-5	77.92



**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

DAMES & MOORE

Project I.D.: C.P. Clare (Kedzie & Pratt)

Sample #	D&M Sample ID	% Total Solids
29240	PG-11 3-5	82.86
29241	PG-11 9-11	84.24
29242	PG-10 9-11	85.69
29350	PG-13 9-11	69.95



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

Project I.D.: CP Clare						
Dames & Moore Sample ID:	PG 14	PG 14	PG 15	PG 15	PG 15	
Depth:	3-5'	5-7'	3-5'	5-7'	7-9'	
First Environmental Lab Sample ID:	29469	29470	29471	29472	29473	
Date Taken:	08/30/96	08/30/96	08/30/96	08/30/96	08/30/96	
Date Received:	08/30/96	08/30/96	08/30/96	08/30/96	08/30/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8260A						
Date of Analysis:		09/04/96	09/04/96	09/04/96	09/04/96	09/04/96
Matrix		Soil	Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	1	1
Acetone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzene	5.0	5.6	< 5.0	< 5.0	5.2	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	14.9	< 5.0
cis-1,2-Dichloroethene	5.0	101	567	1,420	5,740	51.6
trans-1,2-Dichloroethene	5.0	6.2	102	314	170	< 5.0
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	8.8	19.0	2,120	28,200	8.3
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	18.4	24.2	1,260	9,510	112
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

Project I.D.: CP Clare			
Dames & Moore Sample ID:	PG 16	PG 16	
Depth:	1-3'	3-5'	
First Environmental Lab Sample ID:	29474	29475	
Date Taken:	08/30/96	08/30/96	
Date Received:	08/30/96	08/30/96	
Parameters	Detection Limits	Results ug/kg	Results ug/kg
Volatile Compounds - Method 8260A			
Date of Analysis:	09/04/96	09/04/96	
Matrix	Soil	Soil	
Dilution Factor	1	1	1
Acetone	10.0	< 10.0	< 10.0
Benzene	5.0	18.2	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0
2-Butanone	10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0
Chloromethane	10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	52.5
cis-1,2-Dichloroethene	5.0	68.8	22,600
trans-1,2-Dichloroethene	5.0	24.6	1,810
1,2-Dichloropropane	5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	150	2,810
Toluene	5.0	8.3	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0
Trichloroethene	5.0	140	2,410
Vinyl Acetate	10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 10.0	713
Xylenes (total)	5.0	< 5.0	< 5.0



**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (708) 778-1200 • Fax (708) 778-1233
IEPA Certification #100292

DAMES & MOORE

Project I.D.: CP Clare

Sample #	D&M Sample ID	% Total Solids
29469	PG 14 3-5'	82.84
29470	PG 14 5-7'	80.91
29471	PG 15 3-5'	82.89
29472	PG 15 5-7'	80.92
29473	PG 15 7-9'	85.67
29474	PG 16 1-3'	88.88
29475	PG 16 3-5'	81.57



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

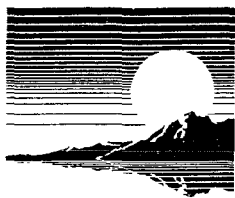
Project I.D.: 30413-002 (CP Clare)						
Dames & Moore Sample ID:		PG-19	PG-20	PG-20	PG-21	PG-21
Depth:		19'-21'	3'-5'	17'-19'	3'5'	15'-17'
First Environmental Lab Sample ID:		47744	47745	47746	47747	47748
Date Taken:		12/12/97	12/12/97	12/12/97	12/12/97	12/12/97
Date Received:		12/12/97	12/12/97	12/12/97	12/12/97	12/12/97
Parameters		Results	Results	Results	Results	Results
Volatile Compounds - Method 8260A - units (ug/kg)						
Date of Analysis:		12/18/97	12/18/97	12/18/97	12/18/97	12/18/97
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	1	1
Acetone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,2-Dichloroethene	5.0	24.3	66.1	< 5.0	< 5.0	< 5.0
trans-1,2-Dichloroethene	5.0	< 5.0	11.3	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	< 5.0	29.5	< 5.0	< 5.0	< 5.0
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	< 5.0	46.1	< 5.0	< 5.0	< 5.0
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0



First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

Project I.D.: 30413-002 (CP Clare)						
Dames & Moore Sample ID:		PG-17	PG-17	PG-18	PG-18	PG-19
Depth:		2'-4'	16'-18'	3'-5'	17'-19'	3'-5'
First Environmental Lab Sample ID:		47739	47740	47741	47742	47743
Date Taken:		12/12/97	12/12/97	12/12/97	12/12/97	12/12/97
Date Received:		12/12/97	12/12/97	12/12/97	12/12/97	12/12/97
Parameters		Results	Results	Results	Results	Results
Volatile Compounds - Method 8260A - units (ug/kg)						
Date of Analysis:		12/17/97	12/17/97	12/17/97	12/17/97	12/18/97
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Dilution Factor	1	1	1	1	1	1
Acetone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
2-Butanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Carbon disulfide	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorodibromomethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Chloroform	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloromethane	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
1,1-Dichloroethane	5.0	18.4	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,2-Dichloroethene	5.0	128	16.7	55.7	1,150	121
trans-1,2-Dichloroethene	5.0	20.8	< 5.0	9.4	< 5.0	21.9
1,2-Dichloropropane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,3-Dichloropropene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethyl benzene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Hexanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
4-Methyl-2-pentanone	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Methylene chloride	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2,2-Tetrachloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Tetrachloroethene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,1-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene	5.0	61.1	9,750	39.6	11,600	21.3
Vinyl Acetate	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Vinyl Chloride	10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Xylenes (total)	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0



**First
Environmental
Laboratories, Inc.**

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IEPA Certification #100292

DAMES & MOORE
Project I.D.: 29278-006

Sample #	D&M Sample ID	% Total Solids
47739	PG-17 (2'-4')	80.14
47740	PG-17 (16'-18')	79.17
47741	PG-18 (3'-5')	80.99
47742	PG-18 (17'-19')	80.90
47743	PG-19 (3'-5')	82.17
47744	PG-19 (19'-21')	78.73
47745	PG-20 (3'-5')	80.97
47746	PG-20 (17'-19')	80.23
47747	PG-21 (3'-5')	82.44
47748	PG-21 (15'-17')	75.90

Appendix F

Excavation Confirmatory Sampling Lab Analytical Reports



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

148978

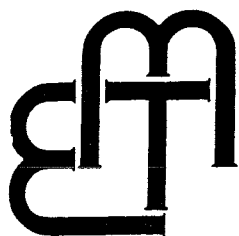
Dames & Moore
One Court Towers/1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project No.: 30413-002
Project Name: CP Clare/Chicago
Sample Description: Soil, E019
Sample No.: 63327

Report Date: 9/18/96
Sample Received: 9/16/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	26.9	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

148978

Dames & Moore
One Court Towers/1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project No.: 30413-002
Project Name: CP Clare/Chicago
Sample Description: Soil, E019
Sample No.: 63327

Report Date: 9/18/96
Sample Received: 9/16/96

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	1.9	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	96	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	13.3	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

148980

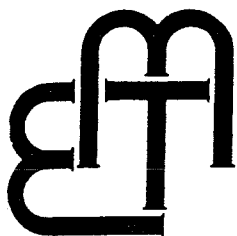
Dames & Moore
One Court Towers/1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/18/96
Sample Received: 9/16/96

Project No.: 30413-002
Project Name: CP Clare/Chicago
Sample Description: Soil, E020
Sample No.: 63328

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	49.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zuber



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

148980

Dames & Moore
One Court Towers/1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/18/96
Sample Received: 9/16/96

Project No.: 30413-002
Project Name: CP Clare/Chicago
Sample Description: Soil, E020
Sample No.: 63328

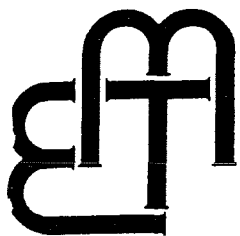
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	624	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zehr



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

148979

Dames & Moore
One Court Towers/1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/18/96
Sample Received: 9/16/96

Project No.: 30413-002
Project Name: CP Clare/Chicago
Sample Description: Soil, E021
Sample No.: 63329

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	1.1	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total) 1923	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149066

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/18/96
Sample Received: As Listed

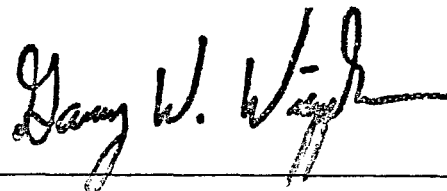
Sample Description: Soil Grab

Sampled	Sample No.:	Location	Chromium Method 6010A(6)	Lead Method 6010A(6)	Mercury Method 7471A(6)
9/16	63327	E019	16.7	10.4	<0.0300
9/16	63328	E020	18.6	11.3	<0.0300
9/16	63329	E021	15.9	10.8	<0.0300

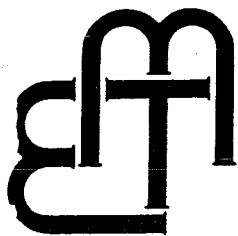
All results expressed as ppm unless otherwise indicated.

(6) Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety.



LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149122

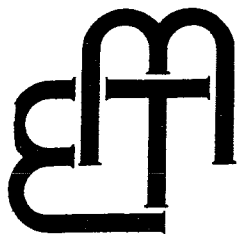
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago, IL
Sample Description: Soil, E022
Sample No.: 63440

Report Date: 9/19/96
Sample Received: 9/17/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	4.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)194	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149122

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago, IL
Sample Description: Soil, E022
Sample No.: 63440

Report Date: 9/19/96
Sample Received: 9/17/96

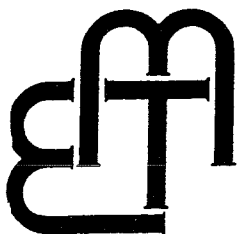
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	1.2	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	250	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149181

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 09/20/96
Sample Received: 09/17/96

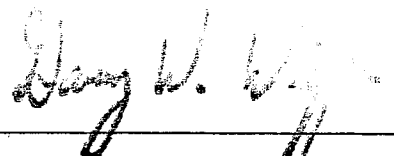
Sample Description: Soil Grab - E022
Sample No.: 63440

Analyte	Result	Date Analyzed	By	Method
Chromium	19.7	09/18/96	GF	6010A(6)
Lead	7.57	09/18/96	GF	6010A(6)
Mercury	<0.0300	09/18/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety





ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149120

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

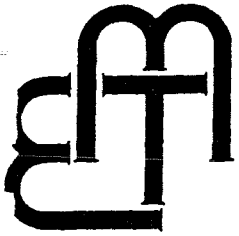
Project Name: CP Clare/Chicago, IL
Sample Description: Soil, E023
Sample No.: 63507

Report Date: 9/19/96
Sample Received: 9/18/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149120

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago, IL
Sample Description: Soil, E023
Sample No.: 63507

Report Date: 9/19/96
Sample Received: 9/18/96

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zelen

LABORATORY DIRECTOR



**ENVIRONMENTAL
MONITORING AND
TECHNOLOGIES, INC.**

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149179

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 09/20/96
Sample Received: 09/18/96

Sample Description: Soil Grab - E023
Sample No.: 63507

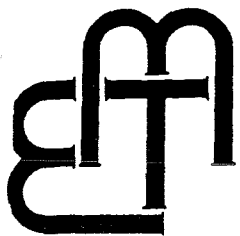
Analyte	Result	Date		
		Analyzed	By	Method
Chromium	13.3	09/19/96	MG	6010A(6)
Lead	9.03	09/19/96	MG	6010A(6)
Mercury	<0.0300	09/18/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149121

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

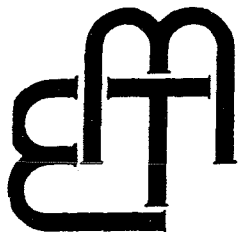
Report Date: 9/19/96
Sample Received: 9/18/96

Project Name: CP Clare/Chicago, IL
Sample Description: Soil, E024
Sample No.: 63508

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	5.9	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	20.3	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149121

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago, IL
Sample Description: Soil, E024
Sample No.: 63508

Report Date: 9/19/96
Sample Received: 9/18/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	5.5	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

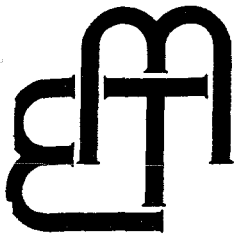
All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zelen

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149178

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 09/20/96
Sample Received: 09/18/96

Sample Description: Soil Grab - E024
Sample No.: 63508

Analyte	Result	Date Analyzed	By	Method
Chromium	14.4	09/19/96	MG	6010A(6)
Lead	9.52	09/19/96	MG	6010A(6)
Mercury	0.0334	09/18/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149193

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil, E027
Sample No.: 63558

Report Date: 9/20/96
Sample Received: 9/18/96

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	4.7	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	774	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	22.2	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zuber

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149193

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil, E027
Sample No.: 63558

Report Date: 9/20/96
Sample Received: 9/18/96

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	1.1	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	408	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	446	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

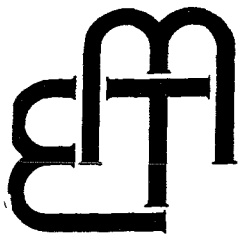
All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zelen

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149184

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 09/20/96
Sample Received: 09/18/96

Sample Description: Soil Grab - E027
Sample No.: 63558

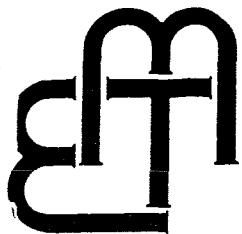
Analyte	Result	Date Analyzed	By	Method
Chromium	15.6	09/19/96	MG	6010A(6)
Lead	9.94	09/19/96	MG	6010A(6)
Mercury	<0.0300	09/19/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety

Greg W. Wight
LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149349

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/24/96
Sample Received: 9/20/96

Sample Description: Soil, E027A
Sample No.: 63887

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	1.3	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	18	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	3980	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zuber

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149349

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/24/96
Sample Received: 9/20/96

Sample Description: Soil, E027A
Sample No.: 63887

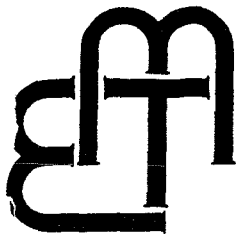
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	206	<0.7	0.7	5
22. Toluene	22.2	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	7.6	<2.5	2.5	5
25. Trichloroethene	5960	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	580	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

LABORATORY DIRECTOR



**ENVIRONMENTAL
MONITORING AND
TECHNOLOGIES, INC.**

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149580

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 09/25/96
Sample Received: 09/20/96

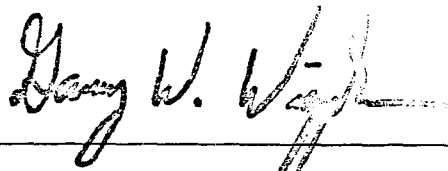
Sample Description: Soil Grab - E027A
Sample No.: 63887

Analyte	Result	Date Completed	By	Method
Chromium	15.0	09/21/96	KS	6010A(6)
Lead	9.52	09/21/96	KS	6010A(6)
Mercury	<0.050	09/23/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety


LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149186-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E028
Sample No.: 63668

Report Date: 9/23/96
Sample Received: 9/19/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	28	<10.0	10.0	100
2. Benzene	2.7	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	4.1	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	6.5	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zehner

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149186-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E028
Sample No.: 63668

Report Date: 9/23/96
Sample Received: 9/19/96

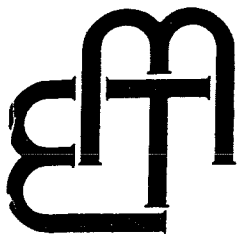
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	7.5	<0.7	0.7	5
22. Toluene	3.6	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	4.3	<0.7	0.7	10
28. Xylenes	19	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zeller



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149186

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 09/20/96
Sample Received: 09/19/96

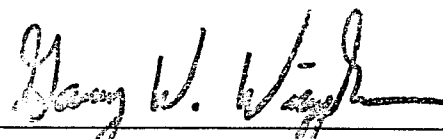
Sample Description: Soil Grab - E028
Sample No.: 63668

Analyte	Result	Date		
		Analyzed	By	Method
Chromium	14.9	09/19/96	MG	6010A(6)
Lead	8.26	09/19/96	MG	6010A(6)
Mercury	<0.0300	09/19/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety



Gary W. Vinyard



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149243-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E029
Sample No.: 63742

Report Date: 9/23/96
Sample Received: 9/19/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	2.7	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	0.7	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Lee E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149243-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E029
Sample No.: 63742

Report Date: 9/23/96
Sample Received: 9/19/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	0.6	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zehner



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149243

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/23/96
Sample Received: 9/19/96

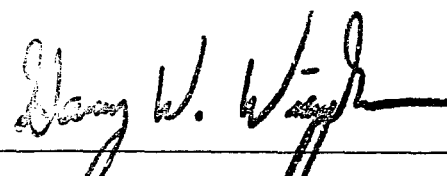
Project Name: CP Clare / Chicago
Sample Description: Soil Grab - E029
Sample No.: 63742

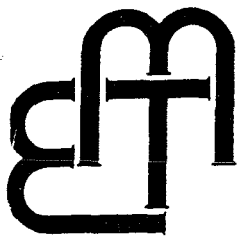
Analyte	Result	Date Completed	By	Method
Chromium	14.1	09/20/96	GF	6010A(6)
Lead	10.9	09/20/96	GF	6010A(6)
Mercury	<0.0300	09/20/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety





ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149244-A

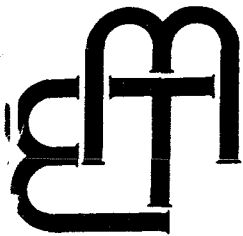
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E030
Sample No.: 63743

Report Date: 9/23/96
Sample Received: 9/19/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	8.3	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Paul E. Zehner



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149244-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E030
Sample No.: 63743

Report Date: 9/23/96
Sample Received: 9/19/96

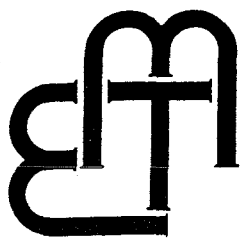
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	0.6	<0.7	0.7	5
22. Toluene	0.6	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	11	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

P. E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149245-A

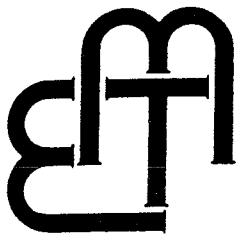
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E031
Sample No.: 63744

Report Date: 9/23/96
Sample Received: 9/19/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL)		Quantitation Limit
	Sample (ppb)	Blank (ppb)	ug/kg	(ppb)	
1. Acetone	<10.0	<10.0	10.0		100
2. Benzene	0.8	<0.5	0.5		5
3. Bromodichloromethane	<0.6	<0.6	0.6		5
4. Bromoform	<4.0	<4.0	4.0		5
5. Carbon disulfide	<0.5	<0.5	0.5		5
6. Carbon tetrachloride	<0.6	<0.6	0.6		5
7. Chlorobenzene	<0.6	<0.6	0.6		5
8. Chlorodibromomethane	<1.8	<1.8	1.8		5
9. Chloroform	<0.5	<0.5	0.5		5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5		5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6		5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5		5
13. 1,2-Dichloroethene (total)	0.5	<0.5	0.5		5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5		5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5		5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9		5
17. Ethylbenzene	<0.6	<0.6	0.6		5
18. Methylene Chloride	<0.8	<0.8	0.8		5
19. Styrene	<10.0	<10.0	10.0		100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9		5

Leah E. Zuber



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149245-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E031
Sample No.: 63744

Report Date: 9/23/96
Sample Received: 9/19/96

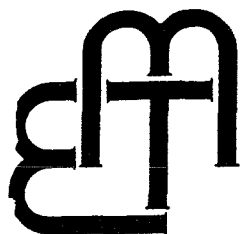
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) <u>ug/kg (ppb)</u>	Quantitation Limit <u>ug/kg (ppb)</u>
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Paul E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149245

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/23/96
Sample Received: 9/19/96

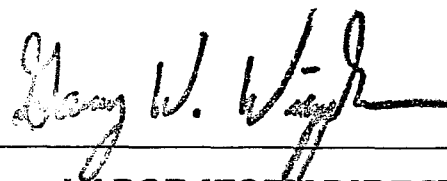
Project Name: CP Clare / Chicago
Sample Description: Soil Grab - E031
Sample No.: 63744

Analyte	Result	Date Completed	By	Method
Chromium	15.2	09/20/96	GF	6010A(6)
Lead	8.16	09/20/96	GF	6010A(6)
Mercury	<0.0300	09/20/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety





ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149246-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E032
Sample No.: 63745

Report Date: 9/23/96
Sample Received: 9/19/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	0.8	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zeller



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149246-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare/Chicago
Sample Description: Soil Grab, E032
Sample No.: 63745

Report Date: 9/23/96
Sample Received: 9/19/96

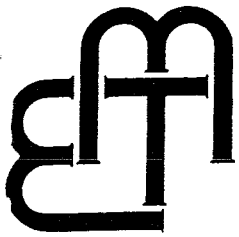
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	0.7	<0.7	0.7	5
22. Toluene	0.6	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

D. E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149246

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/23/96
Sample Received: 9/19/96

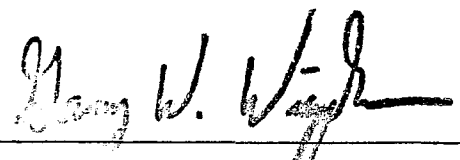
Project Name: CP Clare / Chicago
Sample Description: Soil Grab - E032
Sample No.: 63745

Analyte	Result	Date Completed	By	Method
Chromium	14.0	09/20/96	GF	6010A(6)
Lead	9.28	09/20/96	GF	6010A(6)
Mercury	<0.0300	09/20/96	ML	7471A(6)

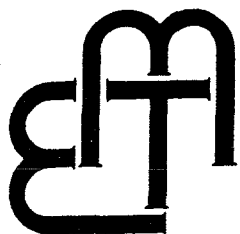
All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety



11



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149350

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

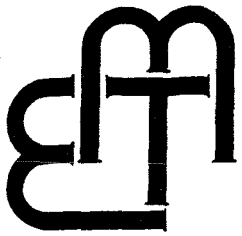
Report Date: 9/24/96
Sample Received: 9/20/96

Sample Description: Soil, E033
Sample No.: 63888

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	4.2	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	343	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Lee E. Zyl

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149350

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/24/96
Sample Received: 9/20/96

Sample Description: Soil, E033
Sample No.: 63888

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	7560	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	2.9	<0.6	0.6	5

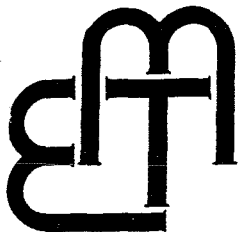
All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leslie E. J...

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149581

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 09/25/96
Sample Received: 09/20/96

Sample Description: Soil Grab - E033A
Sample No.: 63888

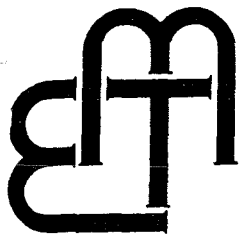
Analyte	Result	Date Completed	By	Method
Chromium	17.6	09/21/96	KS	6010A(6)
Lead	5.98	09/21/96	KS	6010A(6)
Mercury	<0.050	09/23/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

147183

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

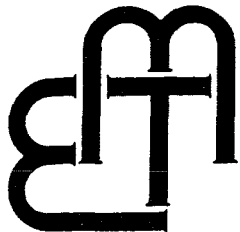
Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 034
Sample No.: 64081

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	46.2	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

147183

Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 034
Sample No.: 64081

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	16.3	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

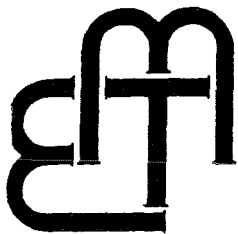
All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zilber

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149499

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E034
Sample No.: 64081


Report Date: 9/26/96
Sample Received: 9/23/96

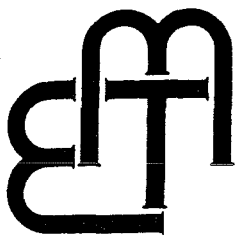
Analyte	Result	Date Completed	By	Method
Chromium	17.1	09/24/96	GF	6010A(6)
Lead	8.40	09/24/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety


LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

147184

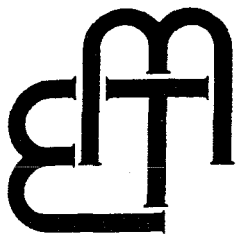
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 037
Sample No.: 64082

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

LABORATORY REPORT

147184

Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 037
Sample No.: 64082

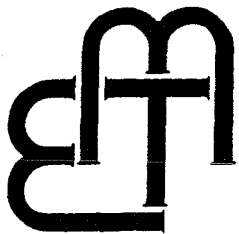
Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zehr



**ENVIRONMENTAL
MONITORING AND
TECHNOLOGIES, INC.**

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149800

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E037
Sample No.: 64082

Report Date: 9/26/96
Sample Received: 9/23/96

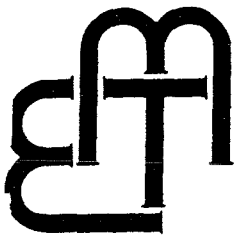
Analyte	Result	Date Completed	By	Method
Chromium	16.5	09/24/96	GF	6010A(6)
Lead	7.05	09/24/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149542

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

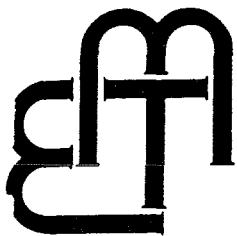
Report Date: 9/25/96
Sample Received: 9/23/96

Sample Description: Soil, E038
Sample No.: 64083

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zuber

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149542

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/25/96
Sample Received: 9/23/96

Sample Description: Soil, E038
Sample No.: 64083

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149801

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E038
Sample No.: 64083

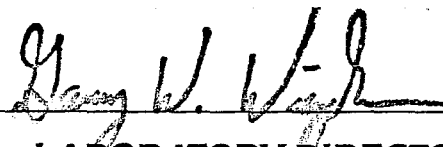
Report Date: 9/26/96
Sample Received: 9/23/96

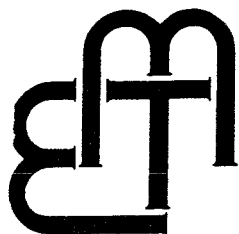
Analyte	Result	Date Completed	By	Method
Chromium	10.9	09/24/96	GF	6010A(6)
Lead	7.49	09/24/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety


LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

147185

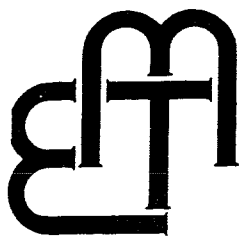
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 039
Sample No.: 64084

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	2.8	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Jack E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

147185

Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 039
Sample No.: 64084

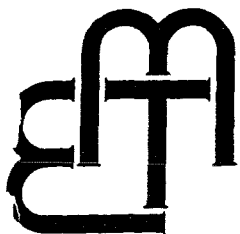
Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zuber



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149802

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E039
Sample No.: 64084

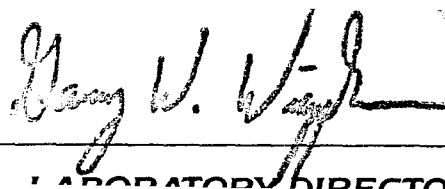
Report Date: 9/26/96
Sample Received: 9/23/96

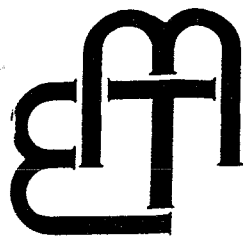
Analyte	Result	Date Completed	By	Method
Chromium	13.0	09/24/96	GF	6010A(6)
Lead	10.6	09/24/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety


LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

147186

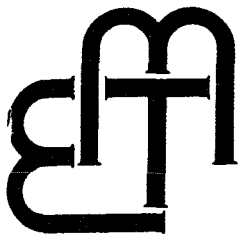
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 040
Sample No.: 64085

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

147186

Report Date: 9/24/96
Sample Received: 9/23/96

Sample Description: Soil, E 040
Sample No.: 64085

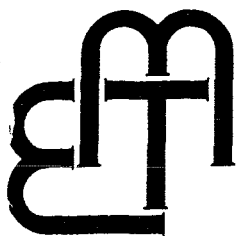
Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zuber



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149803

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E040
Sample No.: 64085

Report Date: 9/26/96
Sample Received: 9/23/96

Analyte	Result	Date Completed	By	Method
Chromium	13.2	09/24/96	GF	6010A(6)
Lead	8.96	09/24/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149489

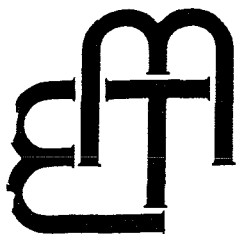
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil, E041
Sample No.: 64249

Report Date: 9/25/96
Sample Received: 9/24/96

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	0.9	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	46.	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149489

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil, E041
Sample No.: 64249

Report Date: 9/25/96
Sample Received: 9/24/96

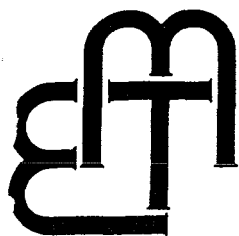
Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zeller



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149814

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E041
Sample No.: 64249

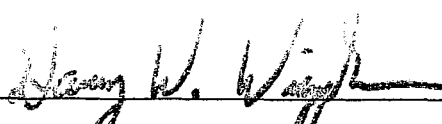
Report Date: 9/26/96
Sample Received: 9/24/96

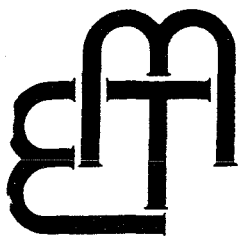
Analyte	Result	Date Completed	By	Method
Chromium	16.2	09/25/96	GF	6010A(6)
Lead	11.1	09/25/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety





ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149490

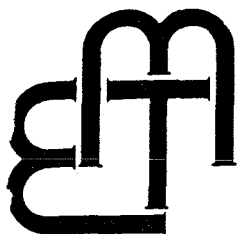
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil, E042
Sample No.: 64250

Report Date: 9/25/96
Sample Received: 9/24/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL)		Quantitation Limit
	Sample (ppb)	Blank (ppb)	ug/kg	(ppb)	
1. Acetone	<10.0	<10.0	10.0		100
2. Benzene	<0.5	<0.5	0.5		5
3. Bromodichloromethane	<0.6	<0.6	0.6		5
4. Bromoform	<4.0	<4.0	4.0		5
5. Carbon disulfide	<0.5	<0.5	0.5		5
6. Carbon tetrachloride	<0.6	<0.6	0.6		5
7. Chlorobenzene	<0.6	<0.6	0.6		5
8. Chlorodibromomethane	<1.8	<1.8	1.8		5
9. Chloroform	<0.5	<0.5	0.5		5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5		5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6		5
12. 1,1-Dichloroethene	7.6	<0.5	0.5		5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5		5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5		5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5		5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9		5
17. Ethylbenzene	1.5	<0.6	0.6		5
18. Methylene Chloride	60.	<0.8	0.8		5
19. Styrene	<10.0	<10.0	10.0		100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9		5

Paul E. Zehner



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149490

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil, E042
Sample No.: 64250

Report Date: 9/25/96
Sample Received: 9/24/96

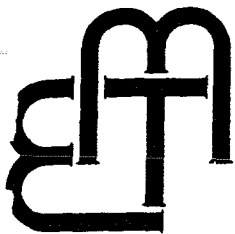
Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	35.7	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	5.5	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zeller



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149815

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E042
Sample No.: 64250

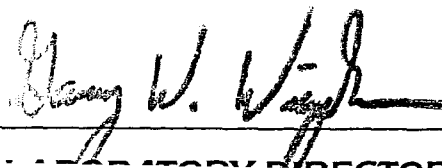
Report Date: 9/26/96
Sample Received: 9/24/96

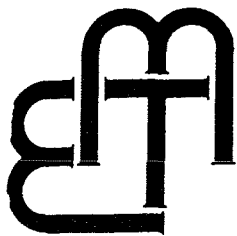
Analyte	Result	Date Completed	By	Method
Chromium	17.8	09/25/96	GF	6010A(6)
Lead	12.1	09/25/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety


LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149494

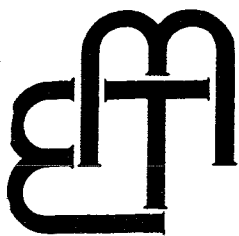
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab EO43
Sample No.: 64251

Report Date: 9/26/96
Sample Received: 9/24/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zuber



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149494

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab E043
Sample No.: 64251

Report Date: 9/26/96
Sample Received: 9/24/96

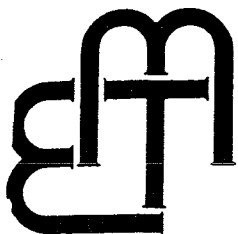
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Paul E. Zehner



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149816

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E043
Sample No.: 64251

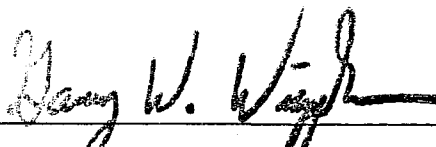
Report Date: 9/26/96
Sample Received: 9/24/96

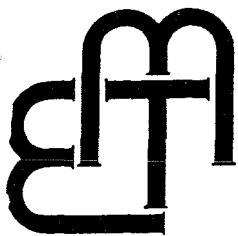
Analyte	Result	Date Completed	By	Method
Chromium	18.6	09/25/96	GF	6010A(6)
Lead	9.90	09/25/96	GF	6010A(6)
Mercury	<0.0300	09/24/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety





ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149495

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab E045
Sample No.: 64254

Report Date: 9/26/96
Sample Received: 9/24/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	16.6	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Lee E. Zehner



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149495

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab E045
Sample No.: 64254

Report Date: 9/26/96
Sample Received: 9/24/96

Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	12.1	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	20.1	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

John E. Zelen



LABORATORY REPORT

Report Date: 9/26/96
Sample Received: 9/24/96

Wm. W. Vign



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149492

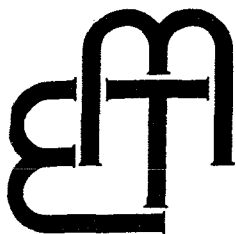
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab EO-46
Sample No.: 64299

Report Date: 9/26/96
Sample Received: 9/24/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
1. Acetone	<10.0	<10.0	10.0	100
2. Benzene	<0.5	<0.5	0.5	5
3. Bromodichloromethane	<0.6	<0.6	0.6	5
4. Bromoform	<4.0	<4.0	4.0	5
5. Carbon disulfide	<0.5	<0.5	0.5	5
6. Carbon tetrachloride	<0.6	<0.6	0.6	5
7. Chlorobenzene	<0.6	<0.6	0.6	5
8. Chlorodibromomethane	<1.8	<1.8	1.8	5
9. Chloroform	<0.5	<0.5	0.5	5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5	5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6	5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5	5
13. 1,2-Dichloroethene (total)	<0.5	<0.5	0.5	5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5	5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5	5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9	5
17. Ethylbenzene	<0.6	<0.6	0.6	5
18. Methylene Chloride	<0.8	<0.8	0.8	5
19. Styrene	<10.0	<10.0	10.0	100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9	5

Leah E. Zuber



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149492

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab EO-46
Sample No.: 64299

Report Date: 9/26/96
Sample Received: 9/24/96

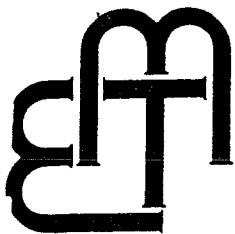
Compound <u>Purgeables</u>	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	<u>Sample</u> (ppb)	<u>Blank</u> (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	<0.7	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Leah E. Zuber



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149492-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E046
Sample No.: 64299

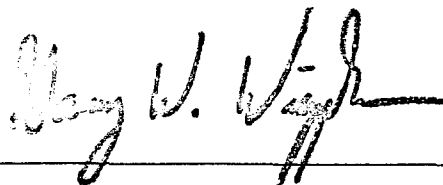
Report Date: 9/27/96
Sample Received: 9/24/96

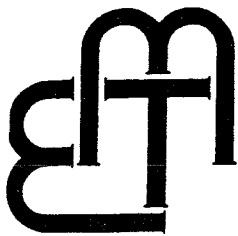
Analyte	Result	Date Completed	By	Method
Chromium	18.0	09/25/96	GF	6010A(6)
Lead	7.76	09/25/96	GF	6010A(6)
Mercury	<0.0300	09/25/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety





ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149493

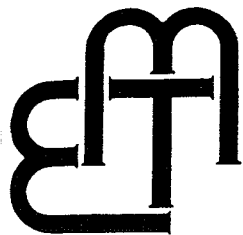
Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab EO-47
Sample No.: 64300

Report Date: 9/26/96
Sample Received: 9/24/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL)		Quantitation Limit
	Sample (ppb)	Blank (ppb)	ug/kg	(ppb)	
1. Acetone	<10.0	<10.0	10.0		100
2. Benzene	<0.5	<0.5	0.5		5
3. Bromodichloromethane	<0.6	<0.6	0.6		5
4. Bromoform	<4.0	<4.0	4.0		5
5. Carbon disulfide	<0.5	<0.5	0.5		5
6. Carbon tetrachloride	<0.6	<0.6	0.6		5
7. Chlorobenzene	<0.6	<0.6	0.6		5
8. Chlorodibromomethane	<1.8	<1.8	1.8		5
9. Chloroform	<0.5	<0.5	0.5		5
10. 1,1-Dichloroethane	<0.5	<0.5	0.5		5
11. 1,2-Dichloroethane	<1.6	<1.6	1.6		5
12. 1,1-Dichloroethene	<0.5	<0.5	0.5		5
13. 1,2-Dichloroethene (total)	2.7	<0.5	0.5		5
14. 1,2-Dichloropropane	<0.5	<0.5	0.5		5
15. cis-1,3-Dichloropropene	<0.5	<0.5	0.5		5
16. trans-1,3-Dichloropropene	<0.9	<0.9	0.9		5
17. Ethylbenzene	<0.6	<0.6	0.6		5
18. Methylene Chloride	<0.8	<0.8	0.8		5
19. Styrene	<10.0	<10.0	10.0		100
20. 1,1,2,2-Tetrachloroethane	<3.9	<3.9	3.9		5

John E. Zelen



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149493

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab EO-47
Sample No.: 64300

Report Date: 9/26/96
Sample Received: 9/24/96

Compound Purgeables	Concentration Found In		Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
	Sample (ppb)	Blank (ppb)		
21. Tetrachloroethene	<0.7	<0.7	0.7	5
22. Toluene	<0.5	<0.5	0.5	5
23. 1,1,1-Trichloroethane	<0.5	<0.5	0.5	5
24. 1,1,2-Trichloroethane	<2.5	<2.5	2.5	5
25. Trichloroethene	<0.5	<0.5	0.5	5
26. Vinyl acetate	<10.0	<10.0	10.0	100
27. Vinyl chloride	4.5	<0.7	0.7	10
28. Xylenes	<0.6	<0.6	0.6	5

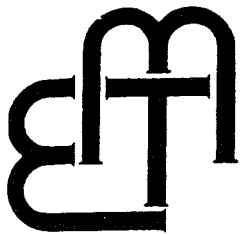
All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846. "Test Methods for Evaluating Solid Waste".

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except its entirety.

Paul E. Zelen

LABORATORY DIRECTOR



ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

149493-A

Dames & Moore
One Court Towers
1701 Golf Road, Suite 1000
Rolling Meadows, IL 60008

Project Name: CP Clare
Sample Description: Soil Grab - E047
Sample No.: 64300

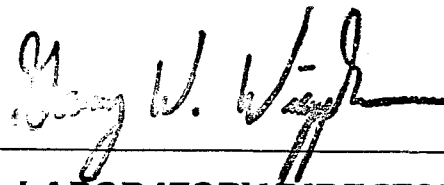
Report Date: 9/27/96
Sample Received: 9/24/96

Analyte	Result	Date Completed	By	Method
Chromium	16.2	09/25/96	GF	6010A(6)
Lead	5.49	09/25/96	GF	6010A(6)
Mercury	<0.0300	09/25/96	ML	7471A(6)

All results expressed as ppm unless otherwise indicated

(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

The contents of this report apply to the sample analyzed. No duplication of this report is allowed except in its entirety


LABORATORY DIRECTOR

Appendix G Groundwater Modelling

GROUNDWATER MODELLING R-14 AND R-26 EQUATIONS

URS has assessed the potential for residual soil volatile organic compound (VOC) impacts to migrate via leaching and groundwater transport beyond the focused area of investigation boundaries. The focused investigation area boundaries represent the aerial limits for which a No Further Remediation letter is being sought. This potential for contaminant migration has been calculated using worst case concentrations and applying the Tiered Approach to Corrective Action Objectives (TACO) Equations for leaching factor (R-14) and downgradient receptor concentrations (R-26).

Contaminant migration estimates have been recalculated for trichloroethene (TCE), tetrachloroethene (PCE), vinyl chloride, and cis 1, 2-DCE. These constituents represent the only VOCs for which residual soil concentrations exceed the Tier 2 soil component of groundwater ingestion remediation objectives. Copies of URS's Tier 2 calculations for this exposure pathway are included later in this appendix. A summary of sample locations where the detected chemical of concern (COC) concentrations were found to exceed the corresponding Tier 2 remediation objective is provided in Table A and on Figures 1 and 3 through 6 of this appendix. The highest measured concentration of each COC is presented below.

Highest Soil Concentration of COC

Parameter	Tier 2 Soil Component of Class II Groundwater Ingestion Remediation Objective (mg/kg)	Highest Concentration (mg/kg)	Sample Location and Depth (ft)
TCE	1.32	55.4	PG 3 (10-12)
PCE	1.25	41.4	PG 13 (9-11)
Vinyl chloride	0.105	0.713	PG 16 (3-5)
cis 1,2-DCE	2.96	22.6	PG 16 (3-5)

The R-14 calculations are intended to simulate the vertical downward migration of dissolved chemical constituents through soil with a one-dimensional leaching equation. Horizontal migration of dissolved chemical constituents through groundwater is then approximated using R-26 with a one-dimensional advective transport simulation including three-dimensional dispersion. The purpose of the calculations in this instance is to predict potential groundwater contaminant concentrations at the boundaries of the focused area of investigation from the source area within the study area. The assumed source area varies for each of the four COCs evaluated as a function of the lateral dimensions where measured soil contaminant concentrations were found to exceed the Tier 2 soil component of (Class II) groundwater ingestion remediation objective. Figures 3 through 6 of this appendix depict the assumed source area for each of the COCs.

In calculating the equations R-14 and R-26, specific input parameters were selected, including:

- Hydraulic conductivity (K) = 1.79×10^{-8} cm/sec obtained via Flexible Wall Permeater testing (ASTM-D 5084-90, TACO Appendix C, Table F) of Shelby tube soil samples obtained on the adjacent CP Clare site. The geotechnical data are provided in Table B.
- Hydraulic gradient (I) = 0.074 cm/cm (ft/ft). This value is estimated based on groundwater

elevations measured on March 31, 1995 for the adjacent CP Clare site. The groundwater elevations and contour interval are provided in Figure 2 of this appendix. Direction of groundwater flow is toward the west.

- Source width perpendicular to groundwater flow direction in horizontal plane (S_w) = 28 feet. The total width of the focused area of investigation in the N-S direction measures 30 feet. Soil samples were obtained at a distance of no less than one foot from the focused investigation area boundaries shown on Figure 1 of this appendix.
- Source width perpendicular to groundwater flow direction in vertical plane (S_d) = 200 feet is the default value for the soil component of groundwater ingestion exposure route in TACO, Appendix C, Table D.
- Width of source area parallel to direction of groundwater flow (W) varies based on the particular contaminant of concern and measured concentrations (in the E-W direction) that exceed the corresponding Tier 2 soil component of groundwater ingestion remediation objective. The assumed values for each of the contaminants are presented in the tables in Appendix B. Groundwater flow direction is toward the west as shown on Figure 2 of this appendix.
- The highest measured concentration for each of the four COCs is presented in Table A. This "worst case" concentration was very conservatively assumed for the entire source area.

Input data for each COC are provided later in this appendix.

Results

The TACO R-14 and R-26 Equations have been used to evaluate the potential for residual soil contamination to leach to groundwater, followed by lateral migration in groundwater to the boundaries of the focused area of investigation using worst case concentrations of each COC (TCE, PCE, vinyl chloride, and cis 1, 2 DCE). For purposes of the evaluation, potential groundwater concentrations were predicted at a distance one foot away from the source and, as mentioned, the maximum detected soil concentration was assumed to be present throughout the source area. The calculation was performed to ensure that potential migration to groundwater from soil will not result in an exceedence of the Class II groundwater standard at the focused area of investigation boundary. The results of the calculations are provided below.

Results of Calculations using Equations R-14 and R-26 Based on Maximum Potential Groundwater Concentrations

Constituent	Maximum Soil Concentration Detected on Site (mg/kg)	Leaching Factor (Equation R-14) (kg/L)	Maximum Calculated Groundwater Concentration (mg/L)	Groundwater Concentration 1 ft Away (Equation R-26) (mg/L)	Class II Groundwater Standard (mg/L)	Solubility in Water (mg/L)
TCE	55.4	0.161	8.93	1.41×10^{-06}	0.025	1,100
PCE	41.4	0.171	7.09	4.82×10^{-11}	0.025	200
Vinyl Chloride	0.713	1.12	0.80	1.40×10^{-05}	0.01	2,760
Cis 1,2-DCE	22.6	0.707	15.98	2.79×10^{-4}	0.2	3,500

The following steps were taken to produce the above values:

- 1) The maximum soil concentrations detected on site (See Tables A and 1) are presented in the

second column.

- 2) The leaching factors for each chemical were calculated using equation R-14 and are presented in the third column. The calculation spreadsheets are provided later in this appendix.
- 3) The maximum groundwater concentration in column four was calculated by multiplying the maximum soil concentration (second column) by the calculated leaching factor (third column).
- 4) The groundwater concentrations at a distance of one foot from the source area are presented in the fifth column. The maximum groundwater concentrations (C_{source}) were used in the equation R-26 to determine the contaminant conditions at a distance of one foot from the source. The calculation spreadsheets are provided later in this appendix.
- 5) The sixth column in the above table presents the Class II groundwater standard for comparison purposes.
- 6) The seventh column in the table presents the solubility of the chemical in water for comparison against the maximum calculated groundwater concentration shown in column four. This demonstrates that the predicted potential concentrations are well below the solubility limit.

Based on the above comparison, it is evident that the worse case maximum concentration will not exceed the Class II groundwater standard at distance of one foot from the source area. The primary factor in attenuating the lateral flow of potentially impacted groundwater in such a short distance is the extremely low hydraulic conductivity of the site soils which serves to significantly retard such flow.

Conclusions

URS has assessed the potential for residual soil VOC impacts to migrate via leaching and groundwater transport beyond the focused area of investigation boundaries. The focused investigation area boundaries represent the aerial limits for which a No Further Remediation letter is sought. The results of the assessment indicate that potential groundwater impacts will not migrate even one foot from the source area before attenuating to concentrations well below the Class II groundwater remediation objectives.



DOMINICK'S
FINER FOODS

3101 WEST PRATT AVE.
SITE

ASPHALT PAVED
PARKING AREA

FORMER BUTLER BUILDING

20' UTILITY EASEMENT

PC15			
	3'-5'	5'-7'	7'-9'
PCE	BDL	28.2	BCO
TCE	BCO	BCO	BCO
1,2-DCE	BCO	BCO	BCO
VC	BDL	BDL	BDL

PC13			
	3'-5'	9'-11'	11'-13'
PCE	24.6	41.4	BDL
TCE	BCO	BCO	BDL
1,2-DCE	BCO	BCO	BDL
VC	BDL	BDL	BDL

E027A-5.5'			
PCE	BCO		
TCE	BCO		
1,2-DCE	BCO		
VC	0.580		

PC18			
	3'-5'	17'-19'	
VOCs	BCO	BCO	

EXISTING 42" SEWER

PC21			
	3'-5'	17'-19'	
VOCs	BDL	BDL	

POWER POLE

PC17			
	2'-4'	16'-18'	
VOCs	BCO	BCO	

PC19			
	3'-5'	19'-21'	
VOCs	BCO	BCO	

PC20			
	3'-5'	17'-19'	
VOCs	BCO	BDL	

PC16			
	1'-3'	3'-5'	
PCE	BCO	BCO	
TCE	BCO	BCO	
1,2-DCE	BCO	BCO	
VC	BDL	0.713	

PC14			
	3'-5'	5'-7'	
PCE	BCO	BCO	
TCE	BCO	BCO	
1,2-DCE	BCO	BCO	
VC	BDL	BDL	

PEOPLES GAS
UNDERGROUND PIPING

OVERHEAD ELECTRIC
LINES

LEGEND:

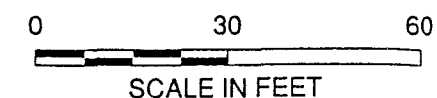
- = COMMERCIAL/INDUSTRIAL DEED RESTRICTION AREAS
- = FOCUSED AREA OF INVESTIGATION
- = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)
- = BORING LOCATION
- = CONFIRMATORY FLOOR SAMPLE LOCATION WITH COLLECTION DEPTH IN FEET bgs
- = BELOW DETECTION LIMIT
- = BELOW (RESIDENTIAL) CLEANUP OBJECTIVE
- = CATCH BASIN
- = FIRE HYDRANT
- = MANHOLE
- = STORM SEWER LINE
- = PROPERTY LINE
- = CHAIN-LINK FENCE
- = GUARD RAIL FENCE

PEOPLES GAS
SITE

	RESIDENTIAL SOIL CLEANUP OBJECTIVES IN ppm	INDUSTRIAL/COMMERCIAL SOIL CLEANUP OBJECTIVES IN ppm
PCE	12	110
TCE	58	364
1,2-DCE	780	1200
VC	0.3	1.78

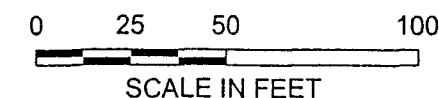
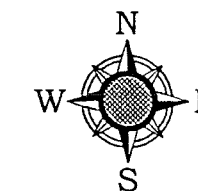
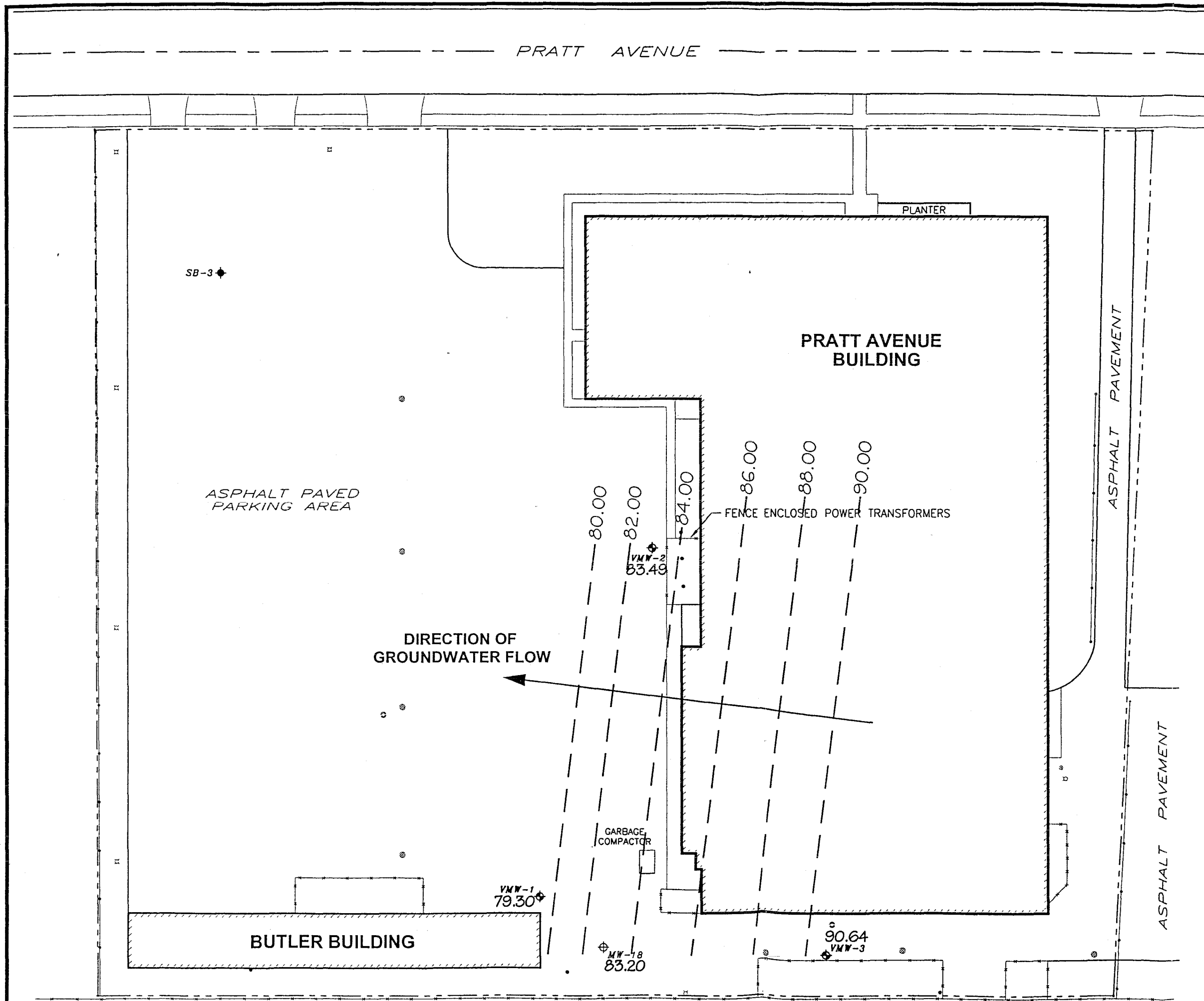
NOTE:

ALL CONFIRMATORY SAMPLE DATA WERE
BELOW RESIDENTIAL SOIL CLEANUP
OBJECTIVES EXCEPT WHERE NOTED.



PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 1
CONFIRMATORY SAMPLE LOCATIONS



LEGEND:

- MW-1 ⊕ = D & M MONITORING WELL
- VMW-1 ⊕ = VERSAR MONITORING WELL
- 83.49 = GROUNDWATER ELEVATION ON MARCH 31, 1995.
- - - = PROPERTY LINE
- · - · - = CHAIN-LINK FENCE
- + - + - = GUARD RAIL FENCE
- ⊙ = CATCH BASIN
- = MANHOLE
- ⊥ = LIGHT POLE
- ⊥ = FIRE HYDRANT
- ⊥ = FIRE VALVE
- = UTILITY POLE

ASSUMED BENCHMARK ELEVATION AT 100.00

C.P. CLARE FACILITY
3101 WEST PRATT AVENUE
CHICAGO, ILLINOIS

FIGURE 2
GROUNDWATER ELEVATION
AND ANALYTICAL DATA



DOMINICK'S
FINER FOODS

3101 WEST PRATT AVE.
SITE

ASPHALT PAVED
PARKING AREA

FORMER BUTLER BUILDING

20' UTILITY EASEMENT

PC3
10'-12' 14'-16'
TCE 55.4 39.1

E027A
5.5'
TCE 5.96

PC18
17'-19'
TCE 11.6

PC13
3'-5' 9'-11'
TCE 3.967 7.38

PC15
3'-5' 5'-7'
TCE 2.13 9.51

EXISTING 42" SEWER

POWER POLE

ASSUMED TCE
SOURCE AREA

OVERHEAD ELECTRIC
LINES

PEOPLES GAS
UNDERGROUND PIPING

PEOPLES GAS
SITE

TIER 2 SOIL REMEDIATION OBJECTIVE
FOR TRICHLOROETHENE = 1.32 ppm.

LEGEND:

- = ASSUMED TCE SOURCE AREA
- = FOCUSED AREA OF INVESTIGATION
- = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)
- = BORING LOCATION
- = CONFIRMATORY FLOOR SAMPLE LOCATION WITH COLLECTION DEPTH IN FEET bgs
- = BELOW DETECTION LIMIT
- = BELOW (RESIDENTIAL) CLEANUP OBJECTIVE
- = CATCH BASIN
- = FIRE HYDRANT
- = MANHOLE
- = STORM SEWER LINE
- = PROPERTY LINE
- = CHAIN-LINK FENCE
- = GUARD RAIL FENCE

0 30 60
SCALE IN FEET

PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 3
TRICHLOROETHENE SOURCE AREA

DATE:
OCTOBER 22, 2001
JOB NO.:
30413-002-007
DRAWN BY: MAR
CHKD BY: GA
SCALE:
1"=30'

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1115



DOMINICK'S
FINER FOODS

3101 WEST PRATT AVE.
SITE

ASPHALT PAVED
PARKING AREA

FORMER BUTLER BUILDING

20' UTILITY EASEMENT

PC13
3'-5' 9'-11'
PCE 24.6 41.4

PC15
3'-5' 5'-7'
PCE 2.12 28.2

EXISTING 42" SEWER

POWER POLE

ASSUMED PCE
SOURCE AREA

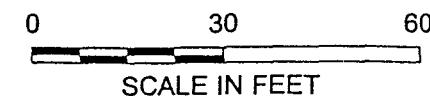
TIER 2 SOIL REMEDIATION OBJECTIVE
FOR TETRACHLOROETHENE = 1.25 ppm.

LEGEND:

- = ASSUMED PCE SOURCE AREA
- = FOCUSED AREA OF INVESTIGATION
- = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)
- = BORING LOCATION
- = CONFIRMATORY FLOOR SAMPLE LOCATION WITH COLLECTION DEPTH IN FEET bgs
- BDL = BELOW DETECTION LIMIT
- BCO = BELOW (RESIDENTIAL) CLEANUP OBJECTIVE
- = CATCH BASIN
- = FIRE HYDRANT
- = MANHOLE
- = STORM SEWER LINE
- = PROPERTY LINE
- = CHAIN-LINK FENCE
- = GUARD RAIL FENCE

PEOPLES GAS
SITE

OVERHEAD ELECTRIC LINES



PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 4
TETRACHLOROETHENE SOURCE AREA

DATE:
OCTOBER 22, 2001
JOB NO.:
30413-002-007
DRAWN BY:
MAR
CHK'D BY:
GA
SCALE:
1"=30'

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1116



DOMINICK'S
FINER FOODS

3101 WEST PRATT AVE.
SITE

ASPHALT PAVED
PARKING AREA

FORMER BUTLER BUILDING











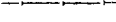
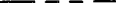


20' UTILITY EASEMENT

EXISTING 42" SEWER

POWER POLE

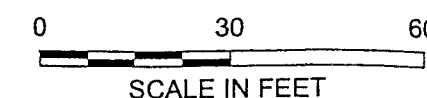
ASSUMED
VINYL CHLORIDE
SOURCE AREA

LEGEND:

-  = ASSUMED VINYL CHLORIDE SOURCE AREA
-  = FOCUSED AREA OF INVESTIGATION
-  = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)
-  PC1 = BORING LOCATION
-  E027-8' = CONFIRMATORY FLOOR SAMPLE LOCATION WITH COLLECTION DEPTH IN FEET bgs
-  BDL = BELOW DETECTION LIMIT
-  BCO = BELOW (RESIDENTIAL) CLEANUP OBJECTIVE
-  = CATCH BASIN
-  = FIRE HYDRANT
-  = MANHOLE
-  = STORM SEWER LINE
-  = PROPERTY LINE
-  = CHAIN-LINK FENCE
-  = GUARD RAIL FENCE

PEOPLES GAS
SITE

TIER 2 SOIL REMEDIATION OBJECTIVE
FOR VINYL CHLORIDE = 0.105 ppm.



PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 5
VINYL CHLORIDE SOURCE AREA

DATE:
OCTOBER 22, 2001
JOB NO.:
30413-002-007
DRAWN BY: MAR
CHK'D BY: GA
SCALE:
1"=30'

URS

1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1116



DOMINICK'S
FINER FOODS

3101 WEST PRATT AVE.
SITE

ASPHALT PAVED
PARKING AREA

FORMER BUTLER BUILDING

20' UTILITY EASEMENT

E027A
5.5'
cis-1,2-DCE 3.98

PC13
3'-5'
cis-1,2-DCE 4.23

EXISTING 42" SEWER

PC15
5'-7'
cis-1,2-DCE 5.74

POWER POLE

ASSUMED
cis-1,2 - DCE
SOURCE AREA

OVERHEAD ELECTRIC
LINES

PEOPLES GAS
UNDERGROUND PIPING

LEGEND:

- = ASSUMED cis-1,2 - DICHLOROETHENE SOURCE AREA
- = FOCUSED AREA OF INVESTIGATION
- = LOCATION OF STEEL SHEET PILING (LEFT IN PLACE)
- = BORING LOCATION
- = CONFIRMATORY FLOOR SAMPLE LOCATION WITH COLLECTION DEPTH IN FEET bgs
- BDL = BELOW DETECTION LIMIT
- BCO = BELOW (RESIDENTIAL) CLEANUP OBJECTIVE
- = CATCH BASIN
- = FIRE HYDRANT
- = MANHOLE
- = STORM SEWER LINE
- = PROPERTY LINE
- = CHAIN-LINK FENCE
- = GUARD RAIL FENCE

PEOPLES GAS
SITE

TIER 2 SOIL REMEDIATION-OBJECTIVE
FOR cis-1,2- DICHLOROETHENE = 2.96 ppm.

PEOPLES GAS
ROGERS PARK SUBSTATION
6659 NORTH KEDZIE AVENUE
CHICAGO, ILLINOIS

FIGURE 6
cis-1,2 - DICHLOROETHENE
SOURCE AREA

DATE:
OCTOBER 22, 2001
JOB NO.:
30413-002-007
DRAWN BY:
MAR
CHK'D BY:
GA
SCALE:
1"=30'

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1115

0 30 60
SCALE IN FEET

APPENDIX A

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE
-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 9/19/2001
Scenario = RESIDENTIAL
Contaminant of Concern = trichloroethene

CALCULATED SSL (mg/kg) = 1.3204802
(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UI
Calculated Csat (mg/kg) = 2905.0565

Where:

Cw = 0.5 (calculated from parameters below, in mg/kg)
Kd = 2.407 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 0.422 (chemical specific)
Dry Soil Bulk Density = 1.67 (specific, in g/cm³)
Soil Particle Density = 2.89 (specific, in g/cm³)
DF = 20 (default)
GWobj = 0.025 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 166 (chemical specific, in cm³/g)
foc = 0.0145 (specific, in g/g)
w = 0.252 (specific, in g/g)
Water Density = 1
n = 0.4221453 (L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = 0.011 (chemical specific, in kg-d/mg)
S = 1100 (chemical specific, in mg/L)
IRw = 2 y site scenario, in L/d)
EF = 350 (default by site scenario, in d/yr)
ED = 30 (default by site scenario, in yr)
BW = 70 (default, in kg)
I = 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 0.0077424 (meters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE

-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas

Date = 9/19/2001

Scenario = INDUSTRIAL/COMMERCIAL

Contaminant of Concern = trichloroethene

CALCULATED SSL (mg/kg) = 1.320

(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)

Calculated Csat (mg/kg) = 2905.056

Where:

Cw = 0.5 (calculated from parameters below, in mg/kg)

Kd = 2.407 (calculated from parameters below, in cm³/g)

Water-filled soil porosity = 0.36776577 (calculated, in L_{water}/L_{soil})

Air-filled soil porosity = 0.05437956 (calculated, in L_{air}/L_{soil})

H' = 0.422 (chemical specific)

Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)

Soil Particle Density = 2.89 (site specific, in g/cm³)

DF = 20 (default)

GWobj = 0.025 SEE NOTE BELOW (chemical specific- Appendix B Table E)

Koc = 166 (chemical specific, in cm³/g)

foc = 0.0145 (site specific, in g/g)

w = 0.252 (site specific, in g/g)

Water Density = 1

n = 0.42214533 (calculated, in L_{pore}/L_{soil})

TR = 0.000001 (default)

ATc = 70 (default, in yr)

SFO = 0.011 (chemical specific, in kg-d/mg)

S = 1100 (chemical specific, in mg/L)

IRw = 1 (default by site scenario, in L/d)

EF = 250 (default by site scenario, in d/yr)

ED = 25 (default by site scenario, in yr)

BW = 70 (default, in kg)

I = 0.3 (default, in m/yr)

Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)

1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 0.02601455 (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE

– CARCINOGENIC COMPOUND –

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 9/19/2001
Scenario = CONSTRUCTION WORKER
Contaminant of Concern = trichloroethene

CALCULATED SSL (mg/kg) = 1.3204802

(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)

Calculated Csat (mg/kg) = 2905.0565

Where:

Cw = 0.5 (calculated from parameters below, in mg/kg)
Kd = 2.407 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 0.422 (chemical specific)
Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)
Soil Particle Density = 2.89 (site specific, in g/cm³)
DF = 20 (default)
GWobj = 0.025 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 166 (chemical specific, in cm³/g)
foc = 0.0145 (site specific, in g/g)
w = 0.252 (site specific, in g/g)
Water Density = 1
n = 0.4221453 (calculated, in L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = 0.011 (chemical specific, in kg-d/mg)
S = 1100 (chemical specific, in mg/L)
IRw = 1 (default by site scenario, in L/d)
EF = 30 (default by site scenario, in d/yr)
ED = 1 (default by site scenario, in yr)
BW = 70 (default, in kg)
I = 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 5.419697 (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective
but the value of cell B41 can be used instead.

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE
-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 9/19/2001
Scenario = RESIDENTIAL
Contaminant of Concern = tetrachloroethene

CALCULATED SSL (mg/kg) = 1.2461356
(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UI
Calculated Csat (mg/kg) = 498.45425

Where:

Cw = 0.5 (calculated from parameters below, in mg/kg)
Kd = 2.2475 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 0.754 (chemical specific)
Dry Soil Bulk Density = 1.67 (specific, in g/cm³)
Soil Particle Density = 2.89 (specific, in g/cm³)
DF = 20 (default)
GWobj = 0.025 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 155 (chemical specific, in cm³/g)
foc = 0.0145 (chemical specific, in g/g)
w = 0.252 (chemical specific, in g/g)
Water Density = 1
n = 0.4221453 (L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = 0.052 (chemical specific, in kg-d/mg)
S = 200 (chemical specific, in mg/L)
IRw = 2 y site scenario, in L/d)
EF = 350 (default by site scenario, in d/yr)
ED = 30 (default by site scenario, in yr)
BW = 70 (default, in kg)
I = 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 0.0016378 (meters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE

-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas

Date = 9/19/2001

Scenario = INDUSTRIAL/COMMERCIAL

Contaminant of Concern = tetrachloroethene

CALCULATED SSL (mg/kg) = 1.246

(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)

Calculated Csat (mg/kg) = 498.454

Where:

Cw = 0.5 (calculated from parameters below, in mg/kg)

Kd = 2.2475 (calculated from parameters below, in cm³/g)

Water-filled soil porosity = 0.36776577 (calculated, in L_{water}/L_{soil})

Air-filled soil porosity = 0.05437956 (calculated, in L_{air}/L_{soil})

H' = 0.754 (chemical specific)

Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)

Soil Particle Density = 2.89 (site specific, in g/cm³)

DF = 20 (default)

GWobj = 0.025 SEE NOTE BELOW (chemical specific- Appendix B Table E)

Koc = 155 (chemical specific, in cm³/g)

foc = 0.0145 (site specific, in g/g)

w = 0.252 (site specific, in g/g)

Water Density = 1

n = 0.42214533 (calculated, in L_{pore}/L_{soil})

TR = 0.000001 (default)

ATc = 70 (default, in yr)

SFO = 0.052 (chemical specific, in kg-d/mg)

S = 200 (chemical specific, in mg/L)

IRw = 1 (default by site scenario, in L/d)

EF = 250 (default by site scenario, in d/yr)

ED = 25 (default by site scenario, in yr)

BW = 70 (default, in kg)

I = 0.3 (default, in m/yr)

Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)

1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 0.00550308 (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE
– CARCINOGENIC COMPOUND –

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 9/19/2001
Scenario = CONSTRUCTION WORKER
Contaminant of Concern = tetrachloroethene

CALCULATED SSL (mg/kg) = 1.2461356
(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)
Calculated Csat (mg/kg) = 498.45425

Where:

Cw = 0.5 (calculated from parameters below, in mg/kg)
Kd = 2.2475 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 0.754 (chemical specific)
Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)
Soil Particle Density = 2.89 (site specific, in g/cm³)
DF = 20 (default)
GWobj = 0.025 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 155 (chemical specific, in cm³/g)
foc = 0.0145 (site specific, in g/g)
w = 0.252 (site specific, in g/g)
Water Density = 1
n = 0.4221453 (calculated, in L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = 0.052 (chemical specific, in kg-d/mg)
S = 200 (chemical specific, in mg/L)
IRw = 1 (default by site scenario, in L/d)
EF = 30 (default by site scenario, in d/yr)
ED = 1 (default by site scenario, in yr)
BW = 70 (default, in kg)
I = 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 1.1464744 (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective
but the value of cell B41 can be used instead.

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE
-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 9/19/2001
Scenario = RESIDENTIAL
Contaminant of Concern = vinyl chloride

CALCULATED SSL (mg/kg) = 0.1052127
(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UI
Calculated Csat (mg/kg) = 925.8718

Where:

Cw = 0.2 (calculated from parameters below, in mg/kg)
Kd = 0.2697 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 1.11 (chemical specific)
Dry Soil Bulk Density = 1.67 (chemical specific, in g/cm³)
Soil Particle Density = 2.89 (chemical specific, in g/cm³)
DF = 20 (default)
GWobj = 0.01 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 18.6 (chemical specific, in cm³/g)
foc = 0.0145 (chemical specific, in g/g)
w = 0.252 (chemical specific, in g/g)
Water Density = 1
n = 0.4221453 (L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = 1.9 (chemical specific, in kg-d/mg)
S = 1760 (chemical specific, in mg/L)
IRw = 2 y site scenario, in L/d)
EF = 350 (default by site scenario, in d/yr)
ED = 30 (default by site scenario, in yr)
BW = 70 (default, in kg)
I = 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 4.482E-05 (meters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE

-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas

Date = 9/19/2001

Scenario = INDUSTRIAL/COMMERCIAL

Contaminant of Concern = vinyl chloride

CALCULATED SSL (mg/kg) = 0.105

(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)

Calculated Csat (mg/kg) = 925.872

Where:

Cw = 0.2 (calculated from parameters below, in mg/kg)

Kd = 0.2697 (calculated from parameters below, in cm³/g)

Water-filled soil porosity = 0.36776577 (calculated, in L_{water}/L_{soil})

Air-filled soil porosity = 0.05437956 (calculated, in L_{air}/L_{soil})

H' = 1.11 (chemical specific)

Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)

Soil Particle Density = 2.89 (site specific, in g/cm³)

DF = 20 (default)

GWobj = 0.01 SEE NOTE BELOW (chemical specific- Appendix B Table E)

Koc = 18.6 (chemical specific, in cm³/g)

foc = 0.0145 (site specific, in g/g)

w = 0.252 (site specific, in g/g)

Water Density = 1

n = 0.42214533 (calculated, in L_{pore}/L_{soil})

TR = 0.000001 (default)

ATc = 70 (default, in yr)

SFO = 1.9 (chemical specific, in kg-d/mg)

S = 1760 (chemical specific, in mg/L)

IRw = 1 (default by site scenario, in L/d)

EF = 250 (default by site scenario, in d/yr)

ED = 25 (default by site scenario, in yr)

BW = 70 (default, in kg)

I = 0.3 (default, in m/yr)

Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)

1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 0.00015061 (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE
– CARCINOGENIC COMPOUND –

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 9/19/2001
Scenario = CONSTRUCTION WORKER
Contaminant of Concern = vinyl chloride

CALCULATED SSL (mg/kg) = 0.1052127
(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)
Calculated Csat (mg/kg) = 925.8718

Where:

Cw = 0.2 (calculated from parameters below, in mg/kg)
Kd = 0.2697 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 1.11 (chemical specific)
Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)
Soil Particle Density = 2.89 (site specific, in g/cm³)
DF = 20 (default)
GWobj = 0.01 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 18.6 (chemical specific, in cm³/g)
foc = 0.0145 (site specific, in g/g)
w = 0.252 (site specific, in g/g)
Water Density = 1
n = 0.4221453 (calculated, in L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = 1.9 (chemical specific, in kg-d/mg)
S = 1760 (chemical specific, in mg/L)
IRw = 1 (default by site scenario, in L/d)
EF = 30 (default by site scenario, in d/yr)
ED = 1 (default by site scenario, in yr)
BW = 70 (default, in kg)
I = 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = 0.0313772 (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective
but the value of cell B41 can be used instead.

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE
-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 10/16/2001
Scenario = RESIDENTIAL
Contaminant of Concern = cis-1,2-dichloroethene

CALCULATED SSL (mg/kg) = 2.9616279
(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UN
Calculated Csat (mg/kg) = 2591.4244

Where:

Cw = 4 (calculated from parameters below, in mg/kg)
Kd = 0.51475 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 0.167 (chemical specific)
Dry Soil Bulk Density = 1.67 (specific, in g/cm³)
Soil Particle Density = 2.89 (specific, in g/cm³)
DF = 20 (default)
GWobj = 0.2 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 35.5 (chemical specific, in cm³/g)
foc = 0.0145 (chemical specific, in g/g)
w = 0.252 (chemical specific, in g/g)
Water Density = 1
n = 0.4221453 (calculated, in L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = (chemical specific, in kg-d/mg)
S = 3500 (chemical specific, in mg/L)
IRw = 2 (by site scenario, in L/d)
EF = 350 (default by site scenario, in d/yr)
ED = 30 (default by site scenario, in yr)
BW = 70 (default, in kg)
I= 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = #DIV/0! (meters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE

-- CARCINOGENIC COMPOUND --

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas

Date = 10/16/2001

Scenario = INDUSTRIAL/COMMERCIAL

Contaminant of Concern = cis-1,2-dichloroethene

CALCULATED SSL (mg/kg) = 2.962

(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)

Calculated Csat (mg/kg) = 2591.424

Where:

Cw = 4 (calculated from parameters below, in mg/kg)

Kd = 0.51475 (calculated from parameters below, in cm³/g)

Water-filled soil porosity = 0.36776577 (calculated, in L_{water}/L_{soil})

Air-filled soil porosity = 0.05437956 (calculated, in L_{air}/L_{soil})

H' = 0.167 (chemical specific)

Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)

Soil Particle Density = 2.89 (site specific, in g/cm³)

DF = 20 (default)

GWobj = 0.2 SEE NOTE BELOW (chemical specific- Appendix B Table E)

Koc = 35.5 (chemical specific, in cm³/g)

foc = 0.0145 (site specific, in g/g)

w = 0.252 (site specific, in g/g)

Water Density = 1

n = 0.42214533 (calculated, in L_{pore}/L_{soil})

TR = 0.000001 (default)

ATc = 70 (default, in yr)

SFO = (chemical specific, in kg-d/mg)

S = 3500 (chemical specific, in mg/L)

IRw = 1 (default by site scenario, in L/d)

EF = 250 (default by site scenario, in d/yr)

ED = 25 (default by site scenario, in yr)

BW = 70 (default, in kg)

I = 0.3 (default, in m/yr)

Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)

1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = #DIV/0! (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective

SSL FOR THE SOIL COMPONENT OF THE GROUNDWATER EXPOSURE ROUTE
– CARCINOGENIC COMPOUND –

LAST REVISED ON 15 SEPTEMBER 1997 BY JS

Site = Peoples Gas
Date = 10/16/2001
Scenario = CONSTRUCTION WORKER
Contaminant of Concern = cis-1,2-dichloroethene

CALCULATED SSL (mg/kg) = 2.9616279
(TO BE USED ONLY IF CONTAMINATION IS NOT IN THE WATER BEARING UNIT)
Calculated Csat (mg/kg) = 2591.4244

Where:

Cw = 4 (calculated from parameters below, in mg/kg)
Kd = 0.51475 (calculated from parameters below, in cm³/g)
Water-filled soil porosity = 0.3677658 (calculated, in L_{water}/L_{soil})
Air-filled soil porosity = 0.0543796 (calculated, in L_{air}/L_{soil})
H' = 0.167 (chemical specific)
Dry Soil Bulk Density = 1.67 (site specific, in g/cm³)
Soil Particle Density = 2.89 (site specific, in g/cm³)
DF = 20 (default)
GWobj = 0.2 SEE NOTE BELOW (chemical specific- Appendix B Table E)
Koc = 35.5 (chemical specific, in cm³/g)
foc = 0.0145 (site specific, in g/g)
w = 0.252 (site specific, in g/g)
Water Density = 1
n = 0.4221453 (calculated, in L_{pore}/L_{soil})
TR = 0.000001 (default)
ATc = 70 (default, in yr)
SFo = (chemical specific, in kg-d/mg)
S = 3500 (chemical specific, in mg/L)
IRw = 1 (default by site scenario, in L/d)
EF = 30 (default by site scenario, in d/yr)
ED = 1 (default by site scenario, in yr)
BW = 70 (default, in kg)
I = 0.3 (default, in m/yr)
Ks = 8 (default by soil type, APPENDIX C TABLE K, in m/yr)
1/(2b+3) = 0.042 (default by soil type, APPENDIX C TABLE K)

GWobj = #DIV/0! (calculated from parameters above)

NOTE: The default value for GWobj is the Tier 1 groundwater objective
but the value of cell B41 can be used instead.

APPENDIX B

LEACHING FACTOR (R14)

Trichloroethene

$$LF_{sw} \left(\frac{mg/L_{water}}{mg/kg_{soil}} \right) = \frac{\rho_s}{[\theta_{ws} + k_s \rho_s + H \theta_{as}] \left(1 + \frac{U_{gw} \delta_{gw}}{IW} \right)}$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Leaching Factor	LF_{sw}	(mg/L)/ (kg/L)	0.161	R14
Soil bulk density	ρ_s	g/cm ³	1.675	Site specific-geotechnical data Table B
Volumetric water content in vadose zone soils	θ_{ws}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Volumetric air content in vadose zone soils	θ_{as}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Soil-water sorption coefficient	k_s	cm ³ /g	6.059	Calculated value (R20)
Organic carbon partition coefficient	K_{oc}	cm ³ /g or L/kg	166	Chemical Specific Appendix C, Table E
Organic carbon content of soil	f_{oc}	g/g	0.0365	Site Specific Geotechnical data Table B
Henry's Law constant	H	cm ³ /cm ³	0.422	Chemical Specific Appendix C, Table E
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site Figure 1)
Aquifer hydraulic conductivity*	K	cm/yr	0.566	Site Specific Geotechnical data Table B
Groundwater Darcy Velocity (Ki)	U_{gw}	cm/yr	0.042	Calculated value (R24)
Ground water mixing zone thickness	δ_{gw}	cm	200	Default value –RBCA
Infiltration rate of water through soil (cm/yr)	I	cm/yr	30	default value-RBCA
Width of source area parallel to ground water flow	W	cm	3352.8 cm (110 ft)	Site Specific (based on analytical results- Figure 2)

* Laboratory measurement of permeability (K)= 1.79×10^{-8} cm/sec or 0.00155 cm/day.

Maximum Theoretical Groundwater Concentration at the Site Boundary (R26)

Trichloroethene

$$C_x = C_{source} * \exp \left[\frac{x}{2\alpha_x} \left(1 - \sqrt{1 + \frac{4\lambda\alpha_x}{U}} \right) \right] \left[\operatorname{erf} \left(\frac{S_w}{4\sqrt{\alpha_y x}} \right) \right] \left[\operatorname{erf} \left(\frac{S_d}{2\sqrt{\alpha_z x}} \right) \right]$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Concentration at distance X from the source	C_x	mg/l	$1.41 * 10^{-6}$	Calculated
Concentration at the source	C_{source}	mg/l	8.93	Site Specific – calculated
Distance along plume centerline from source	X	cm	30.48	Site Specific – calculated
longitudinal dispersivity	α_x	cm	3.048	Equation R16
transverse dispersivity	α_y	cm	1.016	Equation R17
Vertical dispersivity	α_z	cm	0.1524	Equation R18
First order degradation constant	λ	1/d	0.00042	Appendix C, Table E TACO
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site Figure 1)
Aquifer hydraulic conductivity	K	cm/d	0.00155	Site Specific Geotechnical data Table B
Total Soil Porosity	Θ_t	cm ³ /cm ³	0.36	Default value (clay)
Specific Discharge	U	cm/d	0.00032	Equation R19
Source width perpendicular to groundwater flow direction in horizontal plane	S_w	cm	853.44 cm (28 ft)	Site Specific – based on analytical results (Figure 2)
Source width perpendicular to groundwater flow direction in vertical plane	S_d	cm	200	Default value

* Laboratory measurement of permeability (K)= 1.79×10^{-8} cm/sec or 0.00155 cm/day.

LEACHING FACTOR (R14)

Tetrachloroethene

$$LF_{sw} \left(\frac{mg/L_{water}}{mg/kg_{soil}} \right) = \frac{\rho_s}{[\theta_{ws} + k_s \rho_s + H \theta_{as}] \left(1 + \frac{U_{gw} \delta_{gw}}{IW} \right)}$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Leaching Factor	LF_{sw}	(mg/L)/ (kg/L)	0.171	R14
Soil bulk density	ρ_s	g/cm ³	1.675	Site specific-geotechnical data Table –B
Volumetric water content in vadose zone soils	θ_{ws}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Volumetric air content in vadose zone soils	θ_{as}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Soil-water sorption coefficient	k_s	cm ³ /g	5.658	Calculated value (R20)
Organic carbon partition coefficient	K_{oc}	cm ³ /g or L/kg	155	Chemical Specific Appendix C, Table E
Organic carbon content of soil	f_{oc}	g/g	0.0365	Site Specific Geotechnical data Table B
Henry's Law constant	H	cm ³ /cm ³	0.754	Chemical Specific Appendix C, Table E
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site Figure 1)
Aquifer hydraulic conductivity	K	cm/yr	0.566	Site Specific Geotechnical data Table B
Groundwater Darcy Velocity (Ki)	U_{gw}	cm/yr	0.042	Calculated value (R24)
Ground water mixing zone thickness	δ_{gw}	cm	200	Default value –RBCA
Infiltration rate of water through soil (cm/yr)	I	cm/yr	30	default value-RBCA
Width of source area parallel to ground water flow	W	cm	1676.4 cm (55 ft)	Site Specific (based on analytical results Figure 2)

* Laboratory measurement of permeability (K)=1.79 x 10⁻⁸ cm/sec or 0.00155 cm/day.

Maximum Theoretical Groundwater Concentration at the Site Boundary (R26)

Tetrachloroethene

$$C_x = C_{source} * \exp \left[\frac{x}{2\alpha_x} \left(1 - \sqrt{1 + \frac{4\lambda\alpha_x}{U}} \right) \right] \left[\operatorname{erf} \left(\frac{S_w}{4\sqrt{\alpha_y x}} \right) \right] \left[\operatorname{erf} \left(\frac{S_d}{2\sqrt{\alpha_z x}} \right) \right]$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Concentration at distance X from the source	C_x	mg/l	4.82×10^{-11}	Calculated
Concentration at the source	C_{source}	mg/l	7.09	Site Specific - calculated
Distance along plume centerline from source	X	cm	30.48	Site Specific - calculated
longitudinal dispersivity	α_x	cm	3.048	Equation R16
transverse dispersivity	α_y	cm	1.016	Equation R17
Vertical dispersivity	α_z	cm	0.152	Equation R18
First order degradation constant	λ	1/d	0.00096	Appendix C, Table E - TACO
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site Figure 1)
Aquifer hydraulic conductivity	K	cm/d	0.00155	Site Specific Geotechnical data Table B
Total Soil Porosity	Θ_t	cm ³ /cm ³	0.36	Default value (clay)
Specific Discharge	U	cm/d	0.00032	Equation R19
Source width perpendicular to groundwater flow direction in horizontal plane	S_w	cm	853.44 cm (28 ft)	Site Specific –based on analytical results (Figure 2)
Source width perpendicular to groundwater flow direction in vertical plane	S_d	cm	200	Default value

* Laboratory measurement of permeability (K)= 1.79×10^{-8} cm/sec or 0.00155 cm/day.

LEACHING FACTOR (R14)

Vinyl Chloride

$$LF_{sw} \left(\frac{mg/L_{water}}{mg/kg_{soil}} \right) = \frac{\rho_s}{\left[\theta_{ws} + k_s \rho_s + H \theta_{as} \right] \left(1 + \frac{U_{gw} \delta_{gw}}{IW} \right)}$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Leaching Factor	LF_{sw}	(mg/L)/ (kg/L)	1.12	R14
Soil bulk density	ρ_s	g/cm ³	1.675	Site specific- geotechnical data Table B
Volumetric water content in vadose zone soils	θ_{ws}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Volumetric air content in vadose zone soils	θ_{as}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Soil-water sorption coefficient	k_s	cm ³ /g	0.679	Calculated value (R20)
Organic carbon partition coefficient	K_{oc}	cm ³ /g or L/kg	18.6	Chemical Specific Appendix C, Table E
Organic carbon content of soil	f_{oc}	g/g	0.0365	Site Specific Geotechnical data Table B
Henry's Law constant	H	cm ³ /cm ³	1.11	Chemical Specific Appendix C, Table E
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site Figure 1)
Aquifer hydraulic conductivity*	K	cm/yr	0.566	Site Specific Geotechnical data Table B
Groundwater Darcy Velocity (Ki)	U_{gw}	cm/yr	0.042	Calculated value (R24)
Ground water mixing zone thickness	δ_{gw}	cm	200	Default value –RBCA
Infiltration rate of water through soil (cm/yr)	I	cm/yr	30	default value-RBCA
Width of source area parallel to ground water flow	W	cm	9753.6 cm (320 ft)	Site Specific (based on analytical results Figure 2)

* Laboratory measurement of permeability (K)=1.79 x 10⁻⁸ cm/sec or 0.00155 cm/day.

Maximum Theoretical Groundwater Concentration at the Site Boundary (R26)

Vinyl Chloride

$$C_x = C_{source} * \exp \left[\frac{x}{2\alpha_x} \left(1 - \sqrt{1 + \frac{4\lambda\alpha_x}{U}} \right) \right] \left[\operatorname{erf} \left(\frac{S_w}{4\sqrt{\alpha_y x}} \right) \right] \left[\operatorname{erf} \left(\frac{S_d}{2\sqrt{\alpha_z x}} \right) \right]$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Concentration at distance X from the source	C_x	mg/l	1.40×10^{-5}	Calculated
Concentration at the source	C_{source}	mg/l	0.80	Site Specific – calculated
Distance along plume centerline from source	X	cm	30.48	Site Specific - calculated
longitudinal dispersivity	α_x	cm	3.048	Equation R16
transverse dispersivity	α_y	cm	1.016	Equation R17
Vertical dispersivity	α_z	cm	0.457	Equation R18
First order degradation constant	λ	1/d	0.00024	Appendix C, Table E -TACO
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site)
Aquifer hydraulic conductivity	K	cm/d	0.00155	Site Specific Geotechnical data Table B
Total Soil Porosity	Θ_t	cm ³ /cm ³	0.36	Default value (clay)
Specific Discharge	U	cm/d	0.00032	Equation R19
Source width perpendicular to groundwater flow direction in horizontal plane	S_w	cm	853.44 cm (28 ft)	Site Specific – based on analytical results (Figure 2)
Source width perpendicular to groundwater flow direction in vertical plane	S_d	cm	200	Default value

* Laboratory measurement of permeability (K)= 1.79×10^{-8} cm/sec or 0.00155 cm/day.

LEACHING FACTOR (R14)

Cis 1,2-DCE

$$LF_{sw} \left(\frac{mg/L_{water}}{mg/kg_{soil}} \right) = \frac{\rho_s}{[\theta_{ws} + k_s \rho_s + H \theta_{as}] \left(1 + \frac{U_{gw} \delta_{gw}}{IW} \right)}$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Leaching Factor	LF_{sw}	(mg/L)/ (kg/L)	0.707	R14
Soil bulk density	ρ_s	g/cm ³	1.675	Site specific- geotechnical data Table B
Volumetric water content in vadose zone soils	θ_{ws}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Volumetric air content in vadose zone soils	θ_{as}	cm ³ /cm ³	0.17	Default value –clay Appendix C Table D
Soil-water sorption coefficient	k_s	cm ³ /g	1.296	Calculated value (R20)
Organic carbon partition coefficient	K_{oc}	cm ³ /g or L/kg	35.5	Chemical Specific Appendix C, Table E
Organic carbon content of soil	f_{oc}	g/g	0.0365	Site Specific Geotechnical data Table B
Henry's Law constant	H	cm ³ /cm ³	0.167	Chemical Specific Appendix C, Table E
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site Figure 1)
Aquifer hydraulic conductivity*	K	cm/yr	0.566	Site Specific Geotechnical data Table B
Groundwater Darcy Velocity (Ki)	U_{gw}	cm/yr	0.042	Calculated value (R24)
Ground water mixing zone thickness	δ_{gw}	cm	200	Default value –RBCA
Infiltration rate of water through soil (cm/yr)	I	cm/yr	30	default value-RBCA
Width of source area parallel to ground water flow	W	cm	2895.6 cm (95 ft)	Site Specific (based on analytical results Figure 2)

* Laboratory measurement of permeability (K)= 1.79×10^{-8} cm/sec or 0.00155 cm/day.

Maximum Theoretical Groundwater Concentration at the Site Boundary (R26)

Cis 1,2-DCE

$$C_x = C_{source} * \exp \left[\frac{x}{2\alpha_x} \left(1 - \sqrt{1 + \frac{4\lambda\alpha_x}{U}} \right) \right] \left[\operatorname{erf} \left(\frac{S_w}{4\sqrt{\alpha_y x}} \right) \right] \left[\operatorname{erf} \left(\frac{S_d}{2\sqrt{\alpha_z x}} \right) \right]$$

PARAMETER	SYMBOL	UNIT	VALUE	SOURCE
Concentration at distance X from the source	C_x	mg/l	2.79×10^{-4}	Calculated
Concentration at the source	C_{source}	mg/l	15.98	Site Specific – calculated
Distance along plume centerline from source	X	Cm	30.48	Site Specific - calculated
longitudinal dispersivity	α_x	Cm	3.048	Equation R16
transverse dispersivity	α_y	cm	1.016	Equation R17
Vertical dispersivity	α_z	cm	0.457	Equation R18
First order degradation constant	λ	1/d	0.00024	Appendix C, Table E -TACO
Hydraulic gradient	i	cm/cm	0.074	Site specific (ground water elevation 03/31/95 CP Clare site)
Aquifer hydraulic conductivity	K	cm/d	0.00155	Site Specific Geotechnical data Table B
Total Soil Porosity	Θ_t	cm ³ /cm ³	0.36	Default value (clay)
Specific Discharge	U	cm/d	0.00032	Equation R19
Source width perpendicular to groundwater flow direction in horizontal plane	S_w	cm	853.44 cm (28 ft)	Site Specific – based on analytical results (Figure 2)
Source width perpendicular to groundwater flow direction in vertical plane	S_d	cm	200	Default value

* Laboratory measurement of permeability (K)= 1.79×10^{-8} cm/sec or 0.00155 cm/day.

Appendix H Professional Engineer Certification

PROFESSIONAL ENGINEER CERTIFICATION

I attest that all site investigations and remedial activities that are the subject of this plan or report were performed under my direction and this document and all attachments were prepared under my direction or reviewed by me, and to the best of my knowledge and belief, the work described in the plan or report has been designed or completed in accordance with the Act, 35 Ill. Adm. Code 740, and generally accepted engineering practices, and the information presented is accurate and complete.

Gail Artrip - Principal/Senior Engineer
Name - Title

062-046109
Illinois P.E. Number


Signature

November 30, 2003
Expiration Date